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Beginning Reading: A Comparative Study of Beginning Reading Phonics Programs

Michelle Lee Beishline
mlbeish@yahoo.com

BEGINNING READING:
A COMPARATIVE STUDY OF BEGINNING READING PHONICS PROGRAMS

by

Michelle Lee Beishline

Committee Members

Barbara Strobert, EdD, Mentor

Wendiann Sethi, PhD, Reader

Patricia Frey, EdD, Committee Member

Genelle Morris, EdD, Committee Member

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Michelle Beishline has successfully defended and made the required modifications to the text of the doctoral dissertation for the Ed.D. during this **Spring Semester 2020**.

DISSERTATION COMMITTEE
(please sign and date beside your name)

Mentor:
Dr. Barbara Strobert Barbara Strobert 2/28/2020
Date

Committee Member:
Dr. Wendiann Sethi Wendiann R Sethi 2/28/2020
Date

Committee Member:
Dr. Patricia Frey Patricia Frey via 2/28/2020
Date

Committee Member:
Genelle Morris Genelle Morris via 2/28/2020
Date

The mentor and any other committee members who wish to review revisions will sign and date this document only when revisions have been completed. Please return this form to the Office of Graduate Studies, where it will be placed in the candidate's file and submit a copy with your final dissertation to be bound as page number two.

Abstract

There is a gap in our understanding of effective early reading instructional approaches, particularly regarding identifying which specific core systematic phonics reading programs provide longer-lasting impact on literacy achievement. The purpose of this causal comparative study was to examine the effects of two distinct pre-kindergarten phonics programs, a linguistic phonics program and a basal phonics program, on short- and long-term literacy outcomes. The overarching question addressed in this study was whether the type of literacy instruction in pre-kindergarten predicts outcomes in kindergarten and Grade 3 and to what extent, if any, these relationships are moderated by demographic variables. More specifically, this study was undertaken to determine whether the type of literacy instruction in pre-kindergarten, a linguistic phonics reading program, Magic Penny (MP), and a basal phonics reading program, Houghton Mifflin (HM), impacts short- and/or long-term literacy outcomes as measured by the DIBELS assessment in Grade K and Grade 3 and the New York State Test of Performance (NYSTP) in Grade 3, and to what extent the effects (if any) are attributable to or modified by the demographic variables of gender, economic status, ELL, and race/ethnicity.

A total of 594 students from approximately 30 Title 1 designated schools from a large school district in New York State were included in the study. The intervention group consisted of 297 students that received MP instruction in pre-kindergarten in any of the years from 2009-2010 through 2014-2015; the control group consisted of 297 randomly selected pre-kindergarten students who received instruction in the HM pre-Kindergarten literacy program. Binomial logistical regression was executed with extant data from the 594 pre-kindergarten students in order to predict short- and long-term literacy outcomes.

In this study the type of literacy instruction (MP vs. HM) in pre-kindergarten did not predict proficiency in DIBELS Grade K (short-term effect) or Grade 3 NYSTP (long-term effect), nor was there demonstrable improvement in the ability to predict if a student was proficient given the student characteristics. A significant difference in reading performance in Grade three (long-term effect) between the two programs as measured by the Grade 3 DIBELS assessment was demonstrated: Students who received the MP intervention were almost two times more likely to score proficient on the Grade 3 DIBELS assessment than students instructed with HM in pre-kindergarten. Ethnicity was negatively correlated with performance for each ethnicity, suggesting there are unmeasured factors other than race/ethnicity that overcome a negative effect of race on students' performance on these assessments that are mitigated by the use of an instructional (linguistic) phonics program such as MP.

Though no significant differences between the two reading programs were demonstrable in the foundational skills assessment DIBELS in kindergarten or in the NYSTP Grade 3 summative assessment, the results of the foundational skills measured in Grade 3 DIBELS are substantial enough to demonstrate the value of a linguistic phonics program such as Magic Penny. Magic Penny instruction in pre-kindergarten resulted in increased literacy achievement in Grade 3 foundational literacy skills as well as mitigated the factors attributed to race.

Key terms: Pre-kindergarten, reading, early literacy, phonics, phoneme, systematic phonics, linguistic phonics, analytic phonics, foundational skills, DIBELS, NYSTP, Magic Penny

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Dedication

This dissertation is dedicated, first and foremost, to "Little Michelle," for she taught me:

> *If you have love and faith even as small as a mustard seed, you can say to this mountain move from here to there and it will move. Nothing will be impossible for you.*
>
> *(Matthew 17:20)*

This dissertation is also dedicated to Patrick, who provided me foundation and roots; to my brother, Johnny, who means the world to me; and to every child who ever struggled to read.

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CHAPTER I

OVERVIEW OF THE STUDY

Introduction

Despite all our knowledge of the teaching of reading and massive efforts over the decades to increase reading proficiency, the problem remains that there are gaps in our understanding of which reading programs are most effective, and more specifically which type of phonemic and phonics instruction within the core reading programs is most effective. We know the individual, national, and international ramifications of the literacy problem in America, the committees and laws created to address the problem, the past mistakes in research attempts to address the problem, and the fact that phonemic awareness and phonics intervention programs significantly improve children's reading achievement with lasting results.

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy outcomes, and for which subgroups of children. The students in this study attended pre-kindergarten in any of the school years from 2009-2010 through 2014-2015 and received instruction from either a linguistics phonics program or a basal phonics program. Kindergarten and Grade 3 extant data on literacy achievement assessments were analyzed to determine if either program predicts higher academic outcomes.

Chapter 1 includes the following sections: problem background, problem statement, purpose of this study, nature of this study, significance of this study, research questions, hypotheses, theoretical framework, assumptions, limitations, delimitations, and a summary.

Problem Background

"It goes without saying that failure to learn to read places children's futures and lives at risk for highly deleterious outcomes. It is for these reasons that the NICHD (National Institute of Child Health and Human Development) considers reading failure a national public health problem"

(Hearing on Measuring Success: Using Assessments and Accountability, 2001)

Learning to read proficiently is the most critical skill an individual can learn and is the most prominent issue in education today (U.S. Department of Education, 2001-2016; Obama, 2014). The inability to read severely impacts a child's success in school, and later in life. Numerous longitudinal studies have shown that failure to learn to read is a significant problem in the United States, and it has devastating long-lasting consequences impacting an individual's ability to function in society and succeed in school and in life (McCardle & Chhabra, 2004; Kutner et al., 2007; Lyon, 1999-2013; Hearing on Measuring Success, 2001). These consequences negatively affect people's lives, long after their schooling years, impacting social development, self-esteem, success on the job, and earning potential.

Statistics linked to literacy are staggering. Sixty-one percent of adults who fall into the lowest levels of literacy proficiency live in poverty. Children who are born into a family who are in the bottom income earning quartile as adults, have a four in ten chance that they will remain as adults in the bottom income earning quartile (The Brookings Institution, 2007; Butler, Beach, & Winfire, 2008; Urahn et al., 2012; Pew Charitable Trust, 1996-2016). Over seventy percent of prison inmates score in the two lowest proficiency levels in reading (National Center for Educational Statistics, 2002; National Assessment for Education Statistics, 2017 (NAAL). Fifty

percent of adolescents with substance abuse problems also had reading difficulties (Hearing on Measuring Success, 2001). Identifying the most effective method of teaching reading may positively impact the lives of many individuals.

Which is the most effective core program to teach reading is the most controversial issue in education and has yet to be determined (Chall, 1967; McGuinness, 1997, 2004, 2006; McCardle & Chhabra, 2006). There are three main early reading instructional approaches currently in use in the United States, each with different theoretical bases (Chall, 1967; McGuinness, 2004, 2006; McCardle & Chhabra, 2004), and each addresses the instruction of phonics differently. The three approaches are whole language, balanced or eclectic, and systematic.

Whole language reading programs were most prevalent from the 1970s until well into the 1990s, and stem from developmental theories. Proponents of whole language believe that reading is a natural process that develops in stages similar to listening and speaking, (Goodman, 1986). Children are to be immersed in print-rich environments, and the teacher is to facilitate the student's self-directed developmental process (Stanovich & Stanovich, 1995). Students are taught to memorize whole words and are encouraged to guess unknown words by utilizing three cuing systems: graphic appearance, syntax, and context (Goodman, 1986, 1989; Goodman, Smith, Meredith, & Goodman, 1987; Smith, 1985; Stahl & Miller, 1989). Phonics instruction is unstructured, is not systematic, various types of literature are chosen for interest and enjoyment, and text is not controlled. Phonics is taught incidentally as needed, if at all, and at teacher discretion (Lee & Allen, 1963). Whole language was challenged on the basis that there is nothing natural about an invented alphabetic code constructed to represent speech sounds (McGuinness, 2004, 2006; Macmillan, 1997). The philosophical beliefs on whole language were not founded

on scientific research (McGuinness, 1997; Vellutino, 1991). Despite indisputable empirical evidence of the ineffectiveness of the whole language approach in the teaching of reading (Foorman, 1995; Jeynes & Littell, 2000), it is still used today.

The second reading instructional approach, and most widely used in the United States today, is the balanced reading, or eclectic approach. The balanced reading approach is comprised of multiple instructional approaches and derived from many different theoretical bases– constructive, developmental, and structural. The federal government established the National Reading Panel (NRP) to conduct a literature review and develop research to identify the most important components of reading instruction that every reading program should include (McCardle & Chhabra, 2004; Lyon, 1999-2013).

The balanced reading approach is derived from the National Reading Panel's suggestions that every reading program should be comprised of certain elements (Robins, 2010). The report from the NRP identified five major components that the panel suggested should be in every beginning reading program. These five areas became known as the "five pillars" and are the foundation of what most big-name publishers built their basal reading programs upon. The five pillars are phonemic awareness (identifying the smallest units of sound), phonics (correspondence of sounds with letters), fluency, comprehension, and vocabulary (National Reading Panel, 2000). The programs are usually built on themes and have some elements of a structured phonics program. Basal phonics programs most commonly used today employ a variety of different types of systematic phonics. Basal programs typically teach letters first and then the sounds associated with the letters, moving in the direction of learning the grapheme (letter) first, and then learning its corresponding phoneme (sound(s). (McGuinness, 2004, 2006; Chall, 1967; McCardle & Chhabra, 2004). Balanced/eclectic basal programs are the

predominant reading programs used in the United States today (McGuinness, 2004, 2006; Robins, 2010; McCardle & Chhabra, 2004).

The third reading approach, which has been around since written languages were invented, is systematic. It has not been the prevalent mode of core program instruction for beginning reading in the United States in over 40 years. However, systematic phonics is used often as an intervention method in the United States. It is a prevalent method of core reading programs today in England, Scotland, and Ireland (Rose, 2005, 2006; Gray et al., 2007). Given the demand for research-based practice and programs (NRP, 2000; Find Law, 2016), systematic reading approaches are gaining momentum for use not just as an intervention for struggling students but also embedded into core reading programs.

Systematic reading instruction is characterized by a highly structured, organized, and clearly defined sequence for all students. In this reading instruction program, the language and types of texts are controlled. Phonics is the major component, with all important grapheme and phoneme correspondences introduced early in a clearly defined scope and sequence. Skills must be mastered before new ones are built upon them. This last approach stems from the structural theoretical base. Under the umbrella of systematic early reading instruction programs is systematic phonics instruction, which is based in mastery learning.

Empirical evidence has shown that phonological and phonemic awareness, especially phoneme segmenting and blending, are strong indicators of students' future reading success (Hatcher, Hulme, & Snowling, 2004; Isakson, Marchand-Martella, & Martella, 2011). There have been a number of research studies, both singular (Ziolowski & Goldstein, 2008; Bailet et al., 2011; Duff, Hayiou-Thomas, & Hulme, 2012; Duff et al., 2015) and comparative (Qi & Connor, 2000; Maslanka & Joseph, 2002; Justice et al., 2003), that have verified that direct

explicit phonological instruction resulted in significant gains in phonological skills and early literacy skills for all participants in these studies. Evidence suggests that preschool children can and should be taught phonics and phonological skills, including phoneme blending and segmenting (Yeh & Connell, 2008; Duff et al., 2015; McArthur et al., 2012). These early literacy skills can be assessed as early as preschool; therefore, at-risk students can be identified as early as preschool (Duff et al., 2015).

Not all phonics programs are created equal (Snow & Juel, 2005; Steubing et al., 2008). In linguistic-phonics programs children are taught to be able to discriminate the 44 sounds (phonemes) of the English language (Reithaug, 2002). Proponents of this approach contend that written language is an invented code and is not developmental or a natural process and therefore must be directly and explicitly taught. The structure of the English alphabetic system must be understood before developing instructional methods for teaching reading. The logic suggests that if the language was encoded using phonemes, then it must be decoded using phonemes. Decryption and encryption must be logically integrated. The invented alphabetic writing system must be carefully taught, beginning with the phonemes that are the basis for the spoken English language system. The 44 phonemes of the English language can be easily learned, recalled, and used to construct words. The decryption algorithm mirrors the encryption algorithm. The linguistic phonics instructional approach stems from the structural theoretical base and it is derived from the logic of how the written English language was structured.

The various phonics programs are discussed in detail in the review of the literature in Chapter 2.

Problem Statement

The general problem is the gap in our understanding of effective early reading instructional approaches. The specific problem is the gap in our understanding of which systematic phonics reading approach is related to higher literacy achievement and which has a longer lasting impact on literacy academic achievement. Can we predict students' reading achievement based on the type of early literacy phonics program received - linguistic-phonics core reading program as compared to balanced-reading basal core reading program? This study seeks to fill the gap by examining the short-term and long-term relationship of two early literacy programs (Magic Penny Early Literacy program, a linguistic phonics program, and Houghton Mifflin Early Literacy program, a balanced reading basal program) to determine if the type of phonics program instructed in pre-kindergarten can predict future literacy outcomes and if the outcomes are moderated by subgroup performance (gender, economically disadvantaged, ethnicity, ELLs).

Purpose of the Study

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

This study examines student literacy achievement outcomes from students who attended pre-kindergarten in a large northeastern school district from 2009-2010 through 2014-2015. The outcomes of the kindergarten and Grade 3 DIBELS assessments, and the Grade 3 New York State Test of Performance in English Language Arts were compared to see if the type of literacy instruction in pre-kindergarten predicted academic outcomes. The outcomes of subgroup

categories (Black vs. non-Black, ELL vs. non-ELL, economically disadvantaged vs. non-economically disadvantaged, and males vs. females) also were compared to see if they predicted differences between the two groups.

Nature of the Study

Ontology is one's philosophy about reality and what constitutes fact or a state of being. The research philosophy of this study is that of the ontological belief of realism. Realism is the belief that only one truth exists, that truth does not change, that one can find or discover the truth by using objective measurements, and that we can generalize the results to other situations. The fact that written languages are inventions is not subjective; it is, in itself, a fact, therefore subject to objective measurements. Therefore, this research adopts an objective view. Although written languages are invented and they are interpreted social phenomena, their basic logic—the independent pieces that comprise that logic—have an existence independent of social actors. Individual letters and phonemes are objective and exist independently of human thoughts and beliefs (realist), but the collection of them and their associations to create meaning are interpreted through social conditioning.

Quantitative extant data from early literacy tests in pre-kindergarten, kindergarten, and Grade 3 are analyzed in an objective way to determine whether there is a significant difference in academic achievement between the two groups instructed with different early literacy programs.

The purpose of this comparative quantitative study is to examine the short and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

Significance of the Study

The results of this study may have implications for schools seeking to adopt a new core reading series. It may provide school administrators information to make better decisions in the selection of effective early reading core programs and intervention programs, which in turn can ameliorate damage done to children and society, as well as decrease the costs of intervention programs and services to school systems. Additionally, this research study may contribute generalizable knowledge regarding evidence-based reading instruction practices of the teaching of early literacy phonics and phonemic skills, which have been at the forefront of education issues, in turn affecting policy.

Two pre-kindergarten early literacy programs (Magic Penny Early Literacy program and Houghton Mifflin Early Literacy program) will be investigated to determine which program predicts higher academic and non-academic outcomes. Magic Penny closely aligns with the linguistic-phonics theoretical base. It was designed using empirical findings of the NRP (NRP, 2000), along with additional research in the area of phonics, phonological awareness, and phonemic awareness. It is hypothesized that Magic Penny, being a linguistic-phonics program, may increase literacy skills outcomes.

A nation's standing in the world depends on the literacy of its citizens. We are in a knowledge-based economy where citizens will not just be vying for jobs locally or within the nation; they must compete with peers from all over the world, and the nation is losing its ground (Klein & Sparks, 2016; U.S. Education Secretary, John King speech, 2016; Friedman, 2005; Kena et al., 2016; Rampey et al., 2014). By closing the gap in our understanding of how to teach beginning reading—which methods are most effective—the United States may improve literacy rates and better prepare its citizens to compete in a global job market that demands the highest

levels of literacy achievement (Klein &Sparks, 2016; Obama, 2014), thus enabling the nation to retain its standing as a leader among developed countries. This research may stir the beginnings of a paradigm shift in the teaching of reading. It may compel leadership at the highest level, the federal government, to reconvene another national reading panel to study the effectiveness of various phonics and phonemic awareness approaches in core programs, in-turn affecting policy in the leadership and management of government education departments and funding.

What the field of education does not have, and needs, are core reading programs aligned with the elements of what research has suggested that every early reading program should have and core programs that will eliminate the need for such high percentages of students needing academic intervention services. Researchers and government officials are urging us to research three key areas of the problem:

1. The identification of optimal core beginning reading programs that have the elements that research has proposed effective reading programs should have phonemic awareness and phonics as the primary approach to teaching students to read and write, phonemic awareness and phonics embedded *within* a core program for *all* students and not just as isolated intervention programs for students identified as struggling or at-risk, and direct explicit phonemic and phonics instruction that is scaffolded (Camilli, Vargas, & Yurecko, 2003; Stuebing, et al., 2008; McGuinness,2004, 2006; Rose, 2005, 2006; U.S. Department of Education, 2013).
2. Longitudinal studies that can provide unique and notable evidence about the long-term efficacy of core reading programs (Chall, 1967; Rutter, 1981; Keogh & Bernhemier, 1998; McGuinness,2004, 2006 Lyon, 1999-2013, U.S. Department of Education, 2013).

3. Comparative studies of core reading programs to identify which core reading programs and approaches are most effective (McGuinness, 2004, 2006; National Reading Panel, 2000; U.S. Department of Education, 2013) and with which student populations.

Research Questions

Overarching Research Question

Does the type of literacy instruction in Pre-K (Magic Penny vs. Houghton Mifflin) predict academic outcomes in kindergarten and Grade 3, and to what extent are relationships moderated by demographic variables (gender, economic status, ELL, and race/ethnicity)? The academic outcomes in this study were measured by the following:

- CIRCLE Pre-kindergarten assessment (beginning of the year pre-kindergarten scores were used to determine baseline equivalency)
- DIBELS assessment - kindergarten
- DIBELS assessment - Grade 3
- NYSTP in ELA - Grade 3

Subsidiary Research Questions

1. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in kindergarten (measured by DIBELS Grade K)?
2. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by DIBELS Grade 3)?

3. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by NYSTP ELA Grade 3?

Hypotheses

$H1_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in kindergarten DIBELS proficiency.

$H1_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in kindergarten DIBELS proficiency.

$H2_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in Grade 3 DIBELS proficiency.

$H2_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in Grade 3 DIBELS proficiency.

$H3_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in NYSTP Grade 3 ELA proficiency.

$H3_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in NYSTP Grade 3 ELA proficiency.

Theoretical Framework

The theoretical framework for this research is structuralism. This theory is appropriate because written languages are invented codes (McGuinness, 2004, 2006; Lindblom, 2011; Lloyd, 1992; Lloyd & Wernham, 1992, 2009, 2012), and have structures which create meaning. This theory has been used by Assiter (1984) to explore the structure that lies beneath the surface of meaning. Assiter explains that forms of structuralism fall under four main ideas: (1) Structure determines the placement of each element of a whole. (2) Systems have structures. (3)

Coexistence rather than change is the structural law. (4) Beneath the surface of meaning are the structures which create the meaning. From the structuralism point of view, we gain meaning by understanding the structure that lies beneath the surface of meaning.

Linguistic-phonics programs look at the teaching of early reading through the lens of how the written English language was constructed—the central logic behind it, therefore following a structural theoretical framework.

If we compare written language—in this case the written English language—to each one of Assiter's four main ideas of structuralism, one can see the logic of viewing the creation of an early reading program and the instruction of early reading through the lens of the structural framework: (1) The structure of the spoken English language determines the position of a letter(s) representing a sound in a written word; (2) The English language has a fixed structure; (3) The structural configuration of the language does not change—each written letter(s) that represent a specific sound coexists among the other letters in a word to make a whole word (Byrne, 1998; Byrne & Fielding-Barnsley, 1989); (4) The structure of the written language, the specific letter or letters that represent a sound when put together with other letters, are what represent the meaning (Ehri et al., 2001). The letters in and of themselves are not the meaning; however, it is the combination of letters that create words or parts of words that convey meaning.

Phonemes and graphemes are put together to convey meaning. The basic premise is that if we understand how the written English language was constructed, we will better understand how to teach it (Moats, 1994).

Written languages were invented to fit the phonological structure of the specific language for which they are written. Therefore, written languages are structural in nature. The sound units chosen and the graphics to represent the sounds are not arbitrary; they are carefully selected,

each being a part of a whole. Each language has a specific structure and a specific central logic upon which the language was built, and the logic is not subject to change (McGuinness, 2004, 2006; Lloyd, 1992; Lloyd & Wernham, 1992, 2009, 2012). The premise of a linguistic-phonics program is direct explicit instruction of phoneme awareness and phonics that moves in the direction of learning phonemes (sounds) first and then their associated graphemes (letter(s), which is how the written English language was constructed.

Assumptions

It is assumed that the data collection instruments CIRCLE (pre-kindergarten screener), DIBELS (early literacy formative assessment), and the NYSTP ELA Grade 3 are valid and reliable instruments for measuring early literacy skills. It is also assumed that the school district kept accurate demographic and achievement student data.

Limitations

This study is ex post-facto. A weakness of this is that there are many variables that cannot be controlled since instruction has already taken place. This study has a number of limitations: first, participation in the intervention group was not randomized. Therefore, the probability of receiving either pre-kindergarten early literacy program may not be equal for each student; second, this study does not control for variation among teachers in experience, behavior management skills, and philosophical reading beliefs that may affect instructional delivery; third, this study is unable to determine and control the extent to which the programs were implemented with fidelity; fourth, this study is unable to determine and control the type of academic intervention services the students may have received during their kindergarten year and in subsequent years; fifth, this study is unable to determine and control the quality of instruction subsequent to pre-kindergarten for both treatment and control groups; sixth, this study is unable

to identify or control for IQ levels of students; seventh, this study does not control for differing levels and types of parent support, instruction, and activities.

Delimitations

This study was delimited to extant data from an intervention group that utilized the Magic Penny Early Literacy Program because instruction is aligned with the theoretic base of a systematic linguistic-phonics reading program and approaches the instruction of reading through a structural theoretical lens. All teachers in the Magic Penny intervention group had over 10 or more hours of professional development. Participants in this study were limited to general education students only, special education students were not included. Parent involvement and types of intervention programs were not addressed in this study.

Summary

Chapter 1 reviewed the background of the literacy problem in America, purpose of the study, nature of the study, significance of the literacy problem and the study, research questions and hypotheses, theoretical framework, assumptions, and limitations.

Chapter 2 provides the literature review. Chapter 2 has several sections that include an historical overview of reading, a presentation of national and international achievement data, a description of three types of instructional methods for teaching phonics, and also reviews empirical studies on the three types of phonics instruction.

Glossary of Terms

Alphabetic Principle	When letters represent the sounds in words.
Analytic Phonics	An analytic phonics program teaches students to read by focusing on parts of written words they already know to identify new words; for example, if a child knows "an," they can use their knowledge of "an" to decode "can." Children are taught to look for and focus on common phonemes and not to sound out phonemes in isolation. Children analyze the letter-sound associations after the word is identified, in a whole-to-part approach.
Balanced Reading	This method teaches reading by combining "whole language," sight words, and phonics. This can also fit under the realm of eclectic and is an approach employed by many reading series publishers. Proponents believe it is more holistic and authentic because it does not emphasize just skills, but skills within a more meaningful context. This method became more widely used in the United States after the published recommendations of the NRP.
Basal Reader	A published reading program, usually from a large well-known publishing company. Basal readers became popular in the early 1900s. They usually contain all the necessary components for the teacher: manuals, lessons, workbooks, overhead sheets, recommended reading lists, reading books, remedial activities, enrichment activities, and unit assessments. Most publishers emulate each other and try to incorporate as much as possible to be

	comprehensive. A publisher can attract a wider market by meeting various needs and demands. Basal readers typically follow the research. Some basals are more whole-language based and some are more phonics based.
Code	An invented representation of the meaning and sound aspects of a written language.
Fluency	The ability to read text with accuracy, expression and at a pace consistent with spoken language.
Linguistic-Phonics	This method of teaching reading utilizes direct and explicit instruction by discriminating and identifying each of the 44 phonemes spoken in American English, and then each of the letter patterns that represent each phoneme. One phoneme and the letter or letter patterns that represent the phoneme is taught at a time. Linguistic phonics is taught in the direction of sound to letter, not letter to sound. There are two types of linguistic-phonics: basic, which teaches only the 30 or so phonemes comprising the "basic code" and their spellings, and complete or advanced linguistic phonics, which teaches the basic code plus approximately 136 spelling alternatives. The skill development rationale of linguistic-phonics is to develop sound symbol relationships; therefore, story contents, word choice, and language is controlled in linguistic-phonics instructional texts.
Phoneme	A phoneme is the smallest unit(s) of sound of a spoken language.

Phoneme Blending	Phoneme Blending (*aka* sound blending and phonemic synthesis) requires the child to listen to phonemes produced with minimal co-articulation and then blend those phonemes into a word or nonsense syllable.
Phoneme Segmentation	Separating a spoken word into the phonemes that comprise that word.
Phonemic Awareness	Phonemic awareness is the explicit awareness of the phonemes that comprise words. This term is a subskill of phonological awareness. It is the ability to identify and differentiate each unit of sound in a language, and the ability to manipulate these sounds in order to recognize words. This is a critical skill necessary for word recognition and spelling. Phonemes form syllables and words.
Phoneme Discrimination	The ability to differentiate phonemes by identifying whether they are different or the same.
Phonics	The association between sounds/phonemes and graphemes/letters. Letters represent sounds.
Phonological Awareness	Phonological Awareness includes phoneme awareness as well as awareness of the larger units in spoken language. It also includes knowledge of the correct usage of sounds, syllables, and words in spoken language. The term is an umbrella term because it contains many different elements or parts for a set of understandings about speech sounds, including alliteration, rhyme, and syllables.
Synthetic Phonics	An approach to the teaching of reading in which the

	phonemes associated with graphemes are pronounced in isolation and blended together.
Whole Language	In this approach to teaching reading it is believed that reading is learned naturally by providing a print-rich environment. Whole words are memorized. Words are not broken down in parts. Reading is believed to be developmental and children will discover the alphabetic principle when they are ready. Accurate decoding of words is not emphasized, as reading is viewed from a constructivist lens: learners construct their own meaning and will use context and syntax to give them clues for unknown words. Phonics is used as needed and is not systematically, directly, explicitly taught.
Whole-to-Part Phonics	This method is also known as analytic phonics. Students are instructed to read by starting with whole words and focusing and learning parts of the work, such as word families, prefixes or suffixes, and blends. It then moves from parts of the words to individual phonemes.
Whole Word	A whole word method teaches students to read by focusing on the whole word. This method is also called the "look-say" method or "sight words." Children are taught to recognize whole words on sight. It takes over a year to build with a controlled vocabulary, and the whole words are memorized before the sounds of the alphabet and their associations are introduced. This method calls

for a great deal of memorization, therefore proving difficult for students with memorization challenges. This method allows children with good memories to "read" at an early age. Unfortunately, the human limit for memorizing words tops out at about 2,000 words. Star performers in kindergarten and first grade may be identified as "at-risk" by the end of second or third grade unless they also learn the alphabetic principle. The typical lexicon of a kindergarten student is 10,000 words. This lexicon grows by 3,000 or so words each year. The average American has a lexicon of 50,000 words; an educated American has a lexicon of 100,000 words.

CHAPTER II

LITERATURE REVIEW

Introduction

Literacy achievement has far-reaching effects on an individual's success academically, financially, and on their social well-being and welfare. It also has far- reaching effects on national and international level competitiveness and ability to thrive in a global economy. It is important to understand the history of literacy instruction in order to understand its relevance and complexities. Research indicates that the incorporation of phonics and phonemic awareness can be more effective in the teaching of reading in young children. However, some research has suggested that specific types of reading instruction—systematic instruction of phoneme awareness and phonics—may be more impactful on reading acquisition. What is not known is which type of systematic phonemic and phonics awareness instruction is most effective. There are very few published linguistic phonics programs in the United States; therefore, research from European English-speaking nations was reviewed.

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

This study compared literacy achievement results of two groups of pre-kindergarten children of a large city school in the Northeast, each group instructed with different systematic phonemic and phonics reading programs. A search of the literature was executed using the following key terms: early literacy core programs, early reading phonics intervention programs, early literacy, pre-kindergarten literacy, analytic phonics, synthetic phonics, linguistic phonics,

systematic phonics, literacy statistics, federal education laws. These key terms were searched within several databases, including Google Scholar, ERIC, EBSCO, EdlTLib, Library of Congress, Archives Hub, and United States Census Bureau. Information and articles were sorted and organized by sections to help provide the reader with a foundation of historical influences on the instruction of literacy and organize the information in a logical pattern. The focus of the empirical research was limited to research on core early reading phonics programs rather than just early reading phonics intervention programs. Because there are few such core programs in the United States, as well as few empirical studies on such core reading programs in the United States, the literature review expanded to empirical studies of other English-speaking countries outside of the United States.

This chapter has six sections and begins with an historical overview of literacy in America broken down into the various economic eras. Having a foundation of how and why the literacy demands have changed over time is important to understanding the significance of the problem on an individual and national level. Included in this historic overview are how the eras shaped laws, policies, funding and pedagogy. The second section presents the literacy rates both nationally and internationally through the years as well as comparing New York State literacy rates over the years. The third section provides an overview of three of the most common types of phonics instruction. The fourth section reviews research on analytic phonics early reading programs. The fifth section reviews the research on synthetic phonics early reading programs. The sixth section reviews the research on linguistic phonics early reading programs. Chapter II concludes with a summary of the research on early reading programs.

Historical Overview

To frame the problem of the gap in our understanding of effective early reading instructional approaches, one must understand how changes in education are a direct result of policy issues and laws (Robins, 2010) and that these policy issues and laws were created to address the welfare of the nation and its citizens at the time (The History of the Federal Government in Public Education, 2011). As the economic drive changed throughout history, so did the purpose of literacy acquisition, as well as the type and level of reading skills that were necessary for the job market at any point in time. This, in turn, influenced the theoretical base of instructional approaches, pedagogy, instructional materials and assessments, and accountability systems.

Eras of time provide a framework for understanding the reading skill demands based on group needs of the time, the circumstances and events that shaped literacy policies and laws and their impact. Each section provides a brief overview of an era.

The 1800s – Agricultural Era

Looking historically through the lens of the purpose of education, one can see how "the times" shaped policy and vice versa. Until the 1800s there was no real need for education in order to live; education was not necessary for people to survive. Education beyond the basics was for the wealthy and the elite and to provide access to the bible. Rote memorization is all that was required of learning. Subsistence depended on the manual production of goods and farming (Edgar, 2012). Slave labor was heavily relied upon during 1619-1865 to aid in the production of crops (Wickham, 2014). Inventions such as steam power and the cotton gin and the advent of manufacturing processes led to a new era—the Industrial Era (Kelly, 2016). Subsistence required greater reading skill demands, hence greater government involvement and education laws. The

most important federal law of this timeframe was Article 1, Section 8 of the United States Constitution. It granted Congress the power to lay and collect taxes to provide for the "general welfare" of the United States. It is under this "general welfare" clause that the federal government assumed the power to initiate educational activity in its own right and to participate jointly with states, agencies, and individuals in educational activities (The History of the Federal Government in Public Education, 2011). The general welfare called for a more literate society to man the workforce.

1800s Through Early 1900s – Agricultural Era/Industrial Era

In the Industrial era we begin to see government laws in education for the nation to sustain itself and compete amongst other nations of the world. With the abolition of slavery in 1896 (Wickham, 2014) came educational laws created by the federal government because of the paradigms surrounding race and equality, or lack thereof. There was an entire population of citizens uneducated and illiterate, who now had to become an equal part of the working sector. Examples of these laws are as follows:

- 1896 School Segregation Law: This law forbade Black and White children to attend school together. The law decreed separate, but equal, education. Black children were getting an education of significantly less quality, especially with respect to learning how to read. States were to provide an education for Black students and provide the separate building structures and instructional materials to do so.
- 1862 First Morrill Act/Land Grant Act: This law allowed "access to higher education spread to liberal population" (Edgar, 2012), and "the donation of lands to states for educational institutions" (The History of the Federal Government in Education, 2011). The nation needed skilled laborers and tradesmen; therefore, the law provided

for the study of vocations. Literacy demands increased. The labor force needed to be able to read to follow instructions and scaffold their learning. Much of the skilled laborers' skill set involved being able to read for information and follow sequential instructions. To fill this need in driving the nation's economy in industry, this law promoted and funded the learning of a trade. School operations and reading curriculum focused on preparing students for employment in the industry field.

Continuation of the Industrial Age through the early 1900s

The turn of the century and industrialization demanded higher and deeper levels of learning and reading ability (Edgar, 2012). The Industrial Age was one of mass production and one with the ramifications of World War I. The steel industry was strong and powerful in 1913. The United States produced approximately one third of the world's industrial output. With this "change of goods from home and hand to machine and factory," (Kelly, 2016) came the working class needing basic skills to do rudimentary tasks, read and understand technical manuals, and follow instructions. The working force needed deeper cognitive skills than just rote memorization. They needed to learn to read, not for recitation of the Bible, but for understanding and following instructions for the operation of machinery (Edgar, 2012). Examples of laws from this era are as follows:

- 1918 Compulsory Education Law in 1918: As the economy and working sector changed, the federal government responded with compulsory education to ensure that its populace was trained for the new era so that the nation could sustain and compete in the world. This law created the practice of schools mirroring factories. Schools were viewed to be like factories; students were viewed as raw materials, as they were needed to produce. The end-product is what was important, not the student. Even the

physical setup of the classroom (perfect rows for individual completion of tasks) were set up factory-like for mass production. The educational theories mirrored the times as well with the constructivist theory (Stanovich, 1994) of children needing scaffolding of reading skills to reach higher levels of learning, and the predominant behaviorist learning theories (Gagne, 1985; Schunk, 1996). In this era, we see the beginnings of the publishing business in education. Publishers began crafting reading basals.

- G.I. Bill of Rights after WWII: This bill provided benefits to servicemen as compensation for their sacrifice, including the benefit of funding for training them to get them back into the workforce. During this timeframe many adults lacked the basic reading skills needed to enter the civilian work force.
- 1946 Free and Reduced Lunch Plan as a response to impoverished children after the Great Depression (McCardle & Chhabra, 2004).

Laws maintain order, respond to societal needs, and direct society. In the Industrial era we see the education laws directing and shaping society and the teaching of reading by means of compulsory education and funding for the proliferation of skilled industrial laborers for the United States to become the world leader of the Industrial Age that it was. However, we had a nation of individuals with significant deficits in reading ability and reading instruction practices that were not research-based. Instructional approaches varied from state to state. With a decentralized government system, states had the freedom to use federal funds and address laws as they saw fit, with little oversight, controls, or accountability from the federal government. Although there was compulsory education with the intent of creating a literate society, instructional methods for teaching reading had very little oversight and methods varied.

1950s, 1960s, and 1970s Industrial Age/Service Age

Societal changes and issues in 1950s, 1960s and 1970s greatly impacted policy and law in education and reading instruction. In response, many federal laws were created that impact state operations in the instruction of reading.

As the Civil Rights movement strengthened, federal law forced paradigm shifts regarding the rights and perceptions of minority and marginalized groups. One example of how federal laws impacted school operations during this era are the Desegregation Laws (The History of Federal Government in Public Education, 2011). The 1954 Brown versus the Board of Education case outlawed the segregation of black and white people. This shook up the structure of the schools, as well as challenged the deep-seated beliefs and prejudices of many at the time. This federal law was enacted to ensure curricular access equity and ensure the civil rights of minority students. Since the majority of black students were significantly lacking in reading ability, states were forced to restructure their education systems and provide reading instruction for all without marginalizing minorities.

The 1958 Soviet Union's launching of the *Sputnik* satellite into space served as a wakeup call to the United States in two ways. First, the nation was stunned and was in fear of losing its standing as a world leader. As a result, the federal government provided one billion dollars of funding for math, science, and foreign language with the 1958 National Defense Act (The History of Federal Government in Education, 2011; McCardle & Chhabra, 2004). Second, the reaction was a call for testing students. Testing results revealed minorities and the impoverished significantly lacked proficiency in reading. The national poverty rate in 1964 was close to 20%. President Lyndon B. Johnson declared a "War on Poverty." At this time the federal government expanded its role in education as a poverty-reduction strategy. This strategy included improving

literacy rates of the impoverished, as literacy rates were associated with poverty. The federal government enacted the following programs (McCardle & Chhabra, 2004; The History of Federal Government in Education, 2011; Robins, 2010):

- Head Start program: This program subsidized underprivileged pre-kindergarten children and the Title I program. It distributed money to districts with high percentages of at-risk students (low income and minority) with the goal of closing the gap in reading achievement between at-risk and non-at-risk populations by focusing on prerequisite early literacy skills.
- 1965 Elementary and Secondary Education Act (ESEA): This act established comprehensive sets of programs, including Title 1 funding of one billion dollars to the underprivileged and minorities. One of the main goals was to increase reading achievement scores to close the achievement gap. To be eligible to receive funding, students had to be at least two grade levels below expected reading grade levels.
- Reading testing results were reported to the federal government and to the public, and the government subsidized school accountability based on reading test results.

The federal law that most affects how school functions is the United States Constitution. While the Constitution does not refer directly to how schools should operate (including which programs to teach), it ensures equal access to education and the protection of students' and teachers' constitutional rights, such as protection against discrimination based on race, ethnicity, gender, disability, and religion (Educators and the Legal System). Several federal laws in education stemming from the United States Constitution and the Civil Rights Movement are as follows (The History of Federal Government, 2011):

- 1972 Title IX: This act prohibited discrimination in education based on gender. School operations were impacted because schools now had to offer and fund athletics for girls as well as boys and to offer access to the same curriculum. There were many educational programs prior to this law that did not emphasize women in the workforce, as they were to be homemakers. Therefore, all curriculums, including reading acquisition was to be accessible and held to the same standard for girls and boys.
- 1975 Public law 94-142 Education for All Handicapped Children Act: This law enforced the 1973 prohibition of discrimination based on disability and required all schools receiving federal funding to provide handicapped children equal access to a free and appropriate education. It also mandated that students be placed in the least restrictive educational environment. This had an impact on school operations and reading curriculums because schools now had to provide accommodations and services for these students as well as hire specialized staff to meet their needs (Moody, 2012). Previously, low standards and expectations were set for these students, and they may not have had access to appropriate reading curriculum and reading intervention services.
- 1974 Rights for Those with Limited English: Students with limited English were entitled to programs that teach the English language.

In this era the federal government provided funding and stipulated what curriculum areas and what populations the funding should be attributed to. However, it had little accountability attached to the funds distributed or the types of curriculum and instruction delivered. The states held the primary responsibility for the maintenance and operation of the schools, and most

importantly for the teaching of reading. States established, selected, and regulated their reading curriculum, instructional materials and methods, and assessments. States were allowed to create different standards and policies to impact the quality of education and reading instruction. Teachers' unions were a strong entity with increasing membership. Therefore, teachers enjoyed substantial leverage at the state and local levels, as well as freedom to instruct reading as they saw fit. Teachers were yet to be held accountable for student reading achievement, and methods of teacher evaluation were locally derived. Reading was viewed as a developmental process at this time. In this era, if students were not achieving in reading, the notion was there must be something wrong with the child's development or they are just "late bloomers." Lack of reading achievement was not attributed to quality or type of instruction.

1980s and 1890s – Service Age/Technology Age

With computers and the explosion of the internet and worldwide web, the shift towards a global economy began. For a nation to sustain and thrive amongst other nations in this era, learners must not only be able to read to access information quickly, but they must read to learn to organize and produce more effectively and efficiently. Students must be able to read fluently and have strong comprehension skills (Edgar, 2012). The federal government had a duty to protect the general welfare of the nation and responded by driving the nation towards higher learning standards. Despite all the enacted laws and billions of dollars spent to close the achievement gap and increase reading scores, the reading proficiency levels showed little growth. As a result, the federal government enacted the following (The History of Federal Government, 2011; McCardle & Chhabra, 2004; Robins, 2010):

- 1981 Educational Consolidation Act: This act revamped Title I and reduced the regulations of Title I by eliminating paperwork required to apply for Title I. This

made it easier for states to apply and receive authorized compensatory funds to improve academic achievement, including reading proficiency rates, for at-risk and special needs children.

- 1981 Improving America's Schools Act (IASA): The federal government coordinated with states on how to improve education for *all* students. It required states to create English Language Arts standards as an accountability measure of how well students were making improvements. It provided funds for the creation of an accountability system to monitor the progression of reading scores. Previously, in order to receive federal funding, schools had to have 75% of their students fitting the impoverished guidelines (as poverty is associated with literacy rates); it was reduced to 50% of the student population fitting the impoverished guidelines.
- National Commission on Excellence in Education (NCEE): The "Nation at Risk Report" was created by the NCEE. The report shocked the nation, reporting over 40% of students not being able to read at proficiency (Bell, 1983).
- 1989 IDEA Legislation: This legislation increased reading standards for all students to ensure equitable rights to students of all abilities and populations.
- 1998 Reading for Excellence Act (REA): This act extended ESEA and introduced Reading First and Early Reading First. It was designed to improve K-3 reading instruction for states that applied. However, the federal government provided stipulations. In order to receive federal funding, states had to prove they were using scientifically-based reading programs and providing professional development based on scientifically-based best reading practices. This act allocated 260 million dollars towards increasing professional development in reading, towards the purchasing of

reading materials, and to implement reading programs based on scientific research (McCardle, 2004; Promising Initiatives to Improve Education, 2000).

In this era, the locus of control in the teaching of reading was shifting away from the state level to the federal level. States could no longer use federal money as they saw fit; there were stipulations of practice and accountability measures built into the allocation of funding. Federal law and policy were the main force directing and driving the states laws and policy because of the need for the nation's citizens to meet the demands of a globalized economy. (Robins, 2010).

2000s – Information Age/Globalized Economy

This age is characterized by a globalized economy and globalized learners. Reading must go beyond basic understanding. Readers must be able to categorize and synthesize mass information from multiple sources in order to be innovative. In order to be innovative, learners must use metacognition from what they have learned from reading to create new knowledge (Edgar, 2012). In order to compete in the 21st century globalized economy, one must have advanced literacy skills. "In an international economy one must ask, is this something that someone can do someplace else (meaning another country) cheaper and more efficiently? If so, you can expect it to be outsourced to whatever country has the cheapest labor" (Friedman, 2005). This has led to the nationwide focus on college- and career-ready skills so that our citizens are marketable in the employment sector and the nation can sustain being a world economic leader.

Reading scores had barely improved despite decades of focus, policy, and funding. Hence, the federal government took an even stronger role in increasing its locus of control of education. The federal government addressed the lack of literacy acquisition with the following (Robins, 2010):

- 2000 National Reading Panel (NRP): The federal government assembled a panel of experts to review the literature on the teaching of reading and provide recommendations. Five pillars of reading were created from the NRP: phonics, phonemic awareness, comprehension, vocabulary, and fluency. Suggestions for instruction in each of these pillars were made, with the predominant being that reading programs should include phonics and phonemic awareness. The NRP also concluded that teacher quality was an indicator of student success in the teaching of reading (NCLB, 2001; McCardle & Chhabra, 2004).
- 2002 No Child Left Behind Act: This act raised the reading standards for all students. In order to receive federal funding, states had even stricter guidelines to adhere to. States had to create accountability systems to measure annual yearly progress (AYP) towards improving literacy scores. Once states created a test, they needed to show AYP toward state improvement objectives. States had to be on course to have 100% reading proficiency in all subgroups (economically disadvantaged, minority groups, special education, and ELL) within twelve years. States determined proficiency levels and created the formulas that determined satisfactory progress towards AYP for each subgroup. Each was to annually assess reading from grades three to eight. They were to create reading tests that are aligned with state learning standards. The federal government provided money for the development of state reading tests. States, school districts, and individual schools had to make results of the testing public on annual report cards to show evidence of progressing toward reading proficiency objectives. Data were to be broken down according to poverty, ethnicity, disability, and limited English proficiency. To enforce standardization and quality, NCLB required teachers

to be "highly qualified" to be eligible for federal grants. The federal government defined highly qualified as having full certification, a minimum of a bachelor's degree, and demonstrated competence in subject matter and in the practice of teaching. The federal government also allowed for accelerated programs like Teach America and supplied funds for professional development in empirically-based methods of instruction to increase student achievement in reading (NCLB., 2001; Curriculum Standards and School Funding).

- 2002 Educational Science Reform Act (ESRA): This act was meant to gather information on educational progress towards improvement in reading, conduct research on reading educational research, and evaluate the quality of federal reading programs and initiatives. It strengthened education by enhancing relevant literacy research at state and local levels, streamlining federal research by preventing the overlap and duplication of research, and improving accountability by requiring regular evaluations of reading research and educational programs (McCardle & Chhabra, 2004).
- 2010 Race to the Top (RTT): With RTT, states competed for federal funding by submitting plans based on four stipulations: (1) adoption of literacy standards assessment to prepare students for college (Common Core Learning Standards), (2) data systems to measure literacy growth and improvement and inform administrators so they can improve reading instruction, (3) The recruitment and development of effective teachers, (4) the turnaround of low performing schools (Korte, 2015).
- 2015 Every Student Succeeds Act. This act reauthorized NCLB and promoted the literacy Common Core Learning Standards to prepare students for college and career,

> as well as required RTT money to be invested in high-quality programs. Schools had five years to improve literacy scores or force the removal of principal and/or staff, convert to a charter school, or close the school entirely (Every Student Succeeds Act, 2015).

Historically, the federal government left control of reading instruction programs up to the states, and states did not have stipulations for the money they received, nor did they have to be held accountable for improvement. In this era, we see the federal government expanding its locus of control even further in order to lead education reform in the teaching of reading. Each state must create systems of measuring the school and district performance. In order to receive funds, schools must choose programs and instructional methods that research has proven to be effective (NCLB, 2001). This led to changing the way states and schools address the teaching of reading. Federal and state laws mandate that funds will not be allocated unless the programs selected have empirical evidence that they demonstrate improvement (NCLB, 2001). Much of this empirical evidence stemmed from the NRP.

The NRP conducted a meta-analysis of the research on phonics and concluded that there were many ways that phonics could be taught. However, there were errors in the statistical calculation in the NRP meta-analysis of the phonics research. The NRP lumped all phonics studies together—studies that were different in their methodology, statistical analysis, and in their instructional approach of teaching phonics. The NRP used statistical analysis of simple means from all the studies, including studies with small populations which call for an analysis of variance, not analysis based on means. By creating means for all studies and calculating the mean of the means, it skewed and distorted the results (McCardle & Chhabra, 2004; McGuinness, 2006; Robins, 2010; Rose, 2005 and 2006; Steubing et al., 2008).

Additionally, no research that was conducted prior to 1970 was to be reviewed or included in the NRP study, despite the fact that there was methodologically sound seminal research on phonemic and phonics instruction prior to 1970.

Regardless, there is now a plethora of empirical evidence of a significant positive relationship between phonological awareness and phonics intervention programs and long-term improvements in literacy, reading and spelling (National Reading Panel, 2000; McGuinness, 2004, 2006; Ziolowski & Goldstein, 2008; Bailet, et al, 2011; Duff, Hayiou-Thomas & Hulme, 2012; Justice, et al., 2003; Maslanka & Joseph, 2002; Qi & O'Connor, 2000). However, due to the skewing of the data analysis in the NRP summary report, the question remains, which phonemic and phonics instructional approach is most effective and can predict higher reading achievement?

Literacy Rates

In the United States significant numbers of students, irrespective of grade level, lack the basic skills to be able to demonstrate proficiency in reading. This is evidenced by standardized international assessments, national assessments, and state tests. A description of each of these assessments as well as examples of assessment results are included below. The assessments reviewed below are The Program for International Student Assessment (PISA), The Progress in International Reading Literacy Study (PIRLS), The National Assessment of Education Progress (NAEP), and the New York State Test of Performance in English Language Arts (NYSTP ELA).

The Program for International Student Assessment (PISA) assesses the literacy of fifteen-year-olds from 30 major industrialized participating countries and 40 other partner countries and cities every three years. There are eight levels of literacy scores from lowest to highest levels. In the lowest level of proficiency, students demonstrate the ability to answer one specific question

by locating one single piece of explicit information from familiar context. In the highest level of proficiency, students demonstrate the ability to make multiple inferences based on comparing and contrasting unfamiliar ideas and abstractions with fine detail and precision of analysis that requires higher level sophisticated thinking and understanding in order to synthesize, hypothesize, and evaluate complex texts. (PISA, 2012; Klein & Sparks, 2016).

A nation needs a significant number of its students to score in this last level in order to sustain and thrive in a 21st century globally competitive economy (Friedman, 2005; Klein & Sparks, 2016). In 2012 and 2015, approximately 17% of participating 15-year-olds that participated in the international PISA assessment scored in the lowest levels (PISA 2012; Katsberg, Chan, & Murray, 2016). The 2016 PISA results show no improvement in reading performance since 2009 (Klein & Sparks, 2016). Additionally, there were significant achievement gaps between minority groups as compared to White students, as well as significant gaps between economically disadvantaged students and those not identified as economically disadvantaged. (PISA, 2012; Kasterberg, Chan, & Murry,2016).

The Progress in International Reading Literacy Study (PIRLS) is an international assessment that is administered to fourth grade students of participating countries every five years. While PIRLS is similar in structure to the United States National Assessment of Education Progress (NAEP), it is not as rigorous. Both assessments have multiple choice items, short constructed response items, consist of story book narrative texts and informational texts, and view reading as a cognitive constructive process. However, PIRLS reading lexile levels are in the Grade 3 to Grade 4 ranges, and the NAEP lexile levels are in the Grade 4 to Grade 5 range. PIRLS reading passages are shorter and easier than NAEP's reading passages based on Fry readability analysis (Fry, 1968). PIRLS is text-based, meaning that the answers are usually found

explicitly within the text. With the NAEP students must use higher level critical thinking skills to answer implicit questions, as the answers are not found explicitly in the text. The average score of United States fourth graders on the PIRLS assessment indicates no measurable changes from 2006 to 2011. Furthermore, scores of student subgroups show significant achievement gaps among minority groups, as well as significant achievement gaps among economically disadvantaged students (Martin, Mullis, & Kennedy, 2007; Martin & Mullis, 2013).

While it is important to note that United States students have shown little growth on international assessments when compared against themselves, caution should be used when interpreting and comparing United States' performance to other countries' performance on International Assessments. Tienken (2017) describes the sampling issues with international assessments, and the fact that the samples have not been representative of some of the participating country's entire country's population. Many countries' samples are selective and not randomized. The students included in the samples were so disparate that it does not make comparison meaningful. He describes many of the participating countries exclude students who have special needs or are second language learners from their testing samples. One example is the China sample for the 2012 PISA test. China used selective sampling of only cities and students in those cities with the highest social status, wealth, and educational opportunities: Shanghai, Hong Kong, and Macau. Students in the elite private schools are the ones who took the PISA exam. Tienken also asserts that there is a false picture and a false sense of imminent economic collapse that is being proliferated by comparisons drawn from international assessments proclaiming that the United States international ranking is stagnant. While the educational prowess of a country's citizens factors into the economic base of the country, there

are some who use international testing performance results as a platform to push political and economic agendas (Tienken, 2017).

The NAEP, also known as the Nation's Report Card, is a more rigorous assessment of literacy than the PIRLS and tests Grade 4 and Grade 8 students. The 2015 NAEP national assessment results indicated 31% of fourth-grade participants scored below basic and 64% scored below proficiency, 24% of eighth-graders scored below basic, 66% scored below proficiency, and 28% of twelfth-graders scored below basic (National Center for Educational Statistics NCES, 2017). In fifteen years, the scores of all fourth-grade students improved less than 5% (Table 1). In six years, the scores of all eighth-grade students improved only 1% (Table 2). The NAEP also shows evidence of some progress in closing the achievement gaps between minority groups and White students (Tables 1 and 2), and between economically disadvantaged students and students not identified as economically disadvantaged.

Table 1

Comparison of 4th Grade Subgroups below Proficiency Level on the NAEP

Year	% of White Below Proficiency	% of Black Below Proficiency	% of Hispanic Below Proficiency
2000	62%	90%	88%
2005	59%	87%	84%
2015	54%	81%	78%

Note. Data for NAEP 4th and 8th grade subgroup proficiency levels from Nation's Report Card (2015); National Assessment of Educational Progress (2016).

Table 2

Comparison of 8th Grade Subgroups below Proficiency Level on the NAEP

Year	% of White Below Proficiency	% of Black Below Proficiency	% of Hispanic Below Proficiency
2002	59%	87%	85%
2005	61%	88%	85%
2015	56%	85%	79%

Note. Data for NAEP 4th and 8th grade subgroup proficiency levels from Nation's Report Card (2015); National Assessment of Educational Progress (2016).

Each state in the nation must administer academic achievement assessment. In New York the New York State Test of Performance in English Language Arts is administered to students in Grades 3 through 8. Sixty percent of students in Grades 3-8 did not score at or above proficiency on the New York State Test of Performance in English Language Arts (NYSTP ELA) in 2017, and 55% in both 2018 and 2019 (New York State Education Department, n.d.). Seventy-one percent of Black students did not score at or above proficiency in 2017, 66% in 2018, and 65% in 2019. Seventy-one percent of Hispanic students also did not score at or above proficiency in 2017, 65% in 2018, and 64% in 2019. Fifty-three percent of White students did not score at or above proficiency in 2017, 48% in 2018, and 49% in 2019. Ninety-one percent of students identified with special education needs did not score at or above proficiency in 2017 and 86% in both 2018 and 2019. Ninety-five percent of English Language Learners (ELLs) did not score at or above proficiency in 2017 and 86% in both 2018 and 2019. In New York State there has been some growth in literacy scores; however, there is still disparity among the subgroups.

All the aforementioned assessment results (two international, one national, and one state) demonstrate significant achievement gaps between minority groups and non-minority groups. Also demonstrated are significant achievement gaps between students who are economically disadvantaged and students who are not economically disadvantaged (Nation's Report Card, 2015; National Assessment of Educational Progress, 2016; PISA, 2012; Martin, Mullis, & Kennedy, 2007; Martin & Mullis, 2013; New York State Education Department, n.d.). Given these properly conducted cross-cultural studies and national and international testing results, it is an inescapable conclusion that reading instruction in the United States needs further investigation, and more specifically, methods of phonemic and phonics instruction in early reading programs. (McGuinness, 2004, 2006; Nation's Report Card, 2015; National Assessment

of Educational Progress, 2016; PISA, 2012; Martin, Mullis, & Kennedy, 2007; Martin & Mullis, 2013).

England took their search for correcting the literacy problem in their country to much deeper and broader levels than the United States. England re-evaluated the results of the NRP, along with the Rose Report; they included studies from all other English-speaking countries as well as studies in other fields, such as linguistics, psychology, and brain research. Additionally, they did a full review of all the literature, unlike the NRP, which did not allow studies to be included that were conducted prior to 1970. As a result of the change in method of instruction of early reading, England's children now have much higher proficiency rates in reading (over 80% proficient) since the government mandated that every public school must teach using a synthetic phonics reading program.

The NRP was a lofty endeavor and provided valuable information but had several flaws. The NRP did not do a complete and thorough review of *all* the research on reading. A second flaw of the NRP is incorrect statistical evaluations in meta-analysis, hence spurious interpretations and promotions of reading programs and reading interventions (McGuiness, 2004; Robins, 2010), which stymied advances in the teaching of reading and improvement of reading in American children.

The next section of this chapter explains three different types of phonics instruction.

Types of Phonics Instruction

There are many questions regarding the instruction in phonics. Should phonics instruction be in isolation or embedded within a language-rich curriculum? Should phonics instruction link to text? If so, what type of texts—children's literature, controlled text, or patterned text? No one particular phonics approach is specified in the United States. However, research strongly

recommends systematic instruction of phonics (National Reading Panel, 2000; Rose, 2006). England has mandated the systematic synthetic phonics approach in all public schools. A widely used accelerated program in the United Kingdom that teaches synthetic phonics, Jolly Phonics, refrains from exposing children to books until after the first eight to nine weeks. The goal is to prepare students for reading the books with an aggressive letter-sound association program. While there may be a rich print environment and books and poems read to children, they are not expected to try to read books for themselves until after eight to nine weeks of isolated letter-sound association instruction (Lloyd et al, 1998). However, there are many debates around whether this is the best phonics approach. Many researchers believe that there is no "one size fits all" phonics program and argue that what works for one population may differ from what works for another population (Wyse, 2003; Wyse & Styles, 2007; Solity & Vousden, 2009; Tymms, 2004). Table 3 below provides a summary of three phonics programs.

Table 3

Types of Phonics Instruction

Type of Phonics	Direction of Instruction	Text Use	Pace	Delivery Method	Theoretical Base
Analytic	Whole to part within text passage	Children's literature (usually thematic)	Moderate (takes up to 3 years)	Incidental, and taught after memorization of sight words bank	Child Centered Discovery Learning Developmental
Synthetic	Part to whole outside text passage	Controlled text only after letter-sound association is mastered	Rapid (takes ~ 3 months)	Highly structured and logical. Direction can be grapheme to phoneme or vice-versa	Structured Scaffolding Mastery Learning
Linguistic	Part to whole within	Controlled within meaningful context	Rapid (takes ~10 weeks for basic code		Structured Scaffolding

	controlled text passage	and several more for advanced code	Mastery Learning

Note. *Beginning reading: A comparative study of beginning reading phonics programs,* by M. L. Beishline, 2020 [Doctoral dissertation, Seton Hall University].

Analytic Phonics

Instruction in analytic phonics begins at the whole word level. Instruction moves in the direction of whole words to parts of words (letter families) to individual letters. It is referred to as "whole to part." Children are first taught to memorize a limited set of simple whole words that have consonant - vowel (CV), and consonant-vowel-consonant (CVC) patterns that are introduced through graded readers (usually thematic-based) and children's literature. After children have memorized a whole word, they are prompted to look at patterns within words. If a child learns the word "cat," they are prompted to find the word "at" within the word "cat." If they know "cat" and substitute other beginning letters, they can identify and create new words; i.e., "cat," "sat," "mat," "fat." This approach comes from a discovery model. Children discover letter patterns within memorized words and it takes a couple of years to learn letter-sound associations.

Synthetic Phonics

Instruction with synthetic level begins with recognizing and blending the 44 basic sounds of the language before being introduced to print. Instruction begins at the individual phoneme letter, to blending and segmenting phonemes, to whole words. Instruction is highly structured and scaffolded, moving in the direction of individual sounds, to letters that represent sounds, to whole words. It is referred to as "part to whole." Students are first taught to isolate a few letter sounds and the letters that represent the sounds. They are then taught to blend the sounds that they learned to represent a word. For example, if taught to recognize these sounds and their

corresponding letters /s/, /t/, /n/, /i/, and /p/, they can blend to make several words (pat, tin, nap, sit, pin). Sound discrimination of 44 phonemes and the letter(s) that represent them are taught rapidly. Within 9-12 weeks students learn to discriminate all 44 phonemes and their associated spelling patterns. Children are taught analytic phonic skills as well, as they are embedded in the synthetic phonics approach. Within weeks students are able to read and books are introduced. Books that are introduced have highly controlled text. This approach comes from a structural theoretical base, as it is logical and sequential and requires direct explicit instruction. Proponents advocate that reading is not developmental; skills must be taught, not discovered, and unknown words should not be guessed based on context clues, syntax, or pictures. Students learn the 44 phonemes and their associated spelling patterns within three months.

Linguistic Phonics

Instruction in linguistic phonics begins with recognizing and blending the 44 basic sounds of the English language. Instruction begins with teaching students to identify and isolate a phoneme (sound) and then introducing the student the graphic representation (letter or letters) that represent that sound. It begins with sounds that have a 1:1 correspondence with a letter—sounds that have only one letter representing its sound; i.e., the sound /t/ is represented with the letter "T." It then progresses to sounds that have more than one way to represent a sound with letters; i.e., the sound /k/ can be spelled with either a letter "C" or a letter "K." The sound /e/ can be spelled with the letter "e," "ee," "ei," "ea," etc. It progresses to blending and segmenting phonemes, and then to whole words. This isolation of sounds and learning their graphic representation is immediately practiced with controlled text or patterned-controlled text. Deciphering the code, then practicing decoding and encoding is practiced immediately with reading and writing text. Instruction is highly structured and scaffolded. In linguistic phonics

programs the direction of instruction is always the identification of individual sounds (phonemes) to letters or groups of letters that represent those sounds in the whole word. This is referred to as "parts to whole."

Linguistic phonics employs the systematic teaching of reading of phonemes and graphemes contextualized in sentences and whole texts. In this study, Magic Penny (a linguistic phonics program) is compared to Houghton Mifflin (another type of contextualized phonics program). Although both programs teach phonics within literature contexts, Houghton Mifflin instructs in the direction of grapheme to phoneme, and Magic Penny instructs phonics from grapheme to phoneme.

The next sections reviews studies on each type of systematic phonics approach. All studies involved at-risk populations of students, and more specifically Black and economically disadvantaged students. Section 2.3 will review two comparative empirical studies on two separate analytic phonics programs.

Research on Analytical Phonics Early Reading Programs

MCLP/Spark Early Literacy Program

Milwaukee Community Literacy Project/Spark Literacy Program (MCLP/SPARK) was a literacy program that was created and piloted by the Boys & Girls Club of Greater Milwaukee in 2005 in order to increase literacy opportunities in predominantly low-income and minority schools. The need to the increase literacy achievement of at-risk student populations in the Milwaukee Public Schools (MPS) was urgent, given the following fourth-grade proficiency rates: 15% Hispanic, 7% Black, and 7% economically disadvantaged. In 2005 MCLP/SPARK was piloted in one school in MPS and financed by the United Way. By 2010 the program expanded to 10 schools within the MPS system and was funded by United Way, AmeriCorps,

and the Department of Education Innovation Grant award. In 2012 the program received additional funding from the Department of Education Innovative Approaches to Literacy award (IAL) and had further expanded to 14 schools in six states.

The MCLP/Spark program is similar to the Reading Recovery intervention program. In Reading Recovery, children receive 1:1 individual tutoring up to three times per week. Oral reading miscues are analyzed (called a "running record") to determine what skills/cueing systems the students are relying upon to solve unknown words: syntax, context meaning, or phonics. Children are taught these skills/cueing systems to solve unknown words. Modeling and think-alouds are used with this method of instruction. A teacher may pretend to get stuck and then think-aloud strategies to solve unknown words. The teacher may ask questions out-loud to model and elicit the use of three cueing systems to solve the unknown word: semantic, syntax, and phonics cueing systems. Teachers may model asking questions such as, "What word would make sense in this sentence? What word would sound right? What is the sound for the first letter of this word? The teacher may pretend to get stuck and ask for a students' help in order to check for students' internalization of the cueing systems. This method also relies heavily on building a student's sight word bank and analytic phonics. Research on Reading Recovery found that Reading Recovery students out-performed treatment and comparison groups following the instructional period (Pinnell et al., 1994).

Students in the MCLP/SPARK program received 30 minutes of individual tutoring three times a week, using a pull-out model during the school day. They are tutored approximately 60 weeks for two school years. Lessons had six components that were taught sequentially: Familiar Activity (review of previous lesson or skill), a Running Record assessment (to measure progress and inform instruction), Word Play (targeted instruction on foundational reading skills: word

sorts, making words, phonics, phonemic awareness, and the use of graphic organizers), Book Reading at the student's instructional level (practice using strategies to decode words and comprehension skills), Writing Sentences (practice with words from Word Play and words from the Book Reading tex), and a Read Aloud (students listen to their tutor read a book for modeled fluency and vocabulary). Tutors received training and were overseen by certified teachers and site directors. In addition, the program included parent partners at each site to work with parents and families, which included two home visits during the summer of student's first and second year of the MCLP/SPARK program.

Jones et al. (2015) examined the impact of the MCLP/SPARK literacy program on two cohorts of at-risk K-2 students from the 2011-2012 and 2012-2013 school years. The randomized control study compared two groups of students—those who received additional MCLP/SPARK tutoring instruction in addition to their core reading program (treatment group), and those who did not (comparison group). Study participants were from seven schools in the Milwaukee Public School System. Cohort 1 originally had 496 students but had high attrition rates, leaving only 274 remaining participants (135 MCLP/SPARK treatment group and 139 control group). Cohort 2 began with 576 participants and ended up with 529 participants (266 treatment group and 263 control group). Both cohorts of participants had high percentages of Black and economically disadvantaged students, over 80% in both subgroups.

Study participants were administered two tests yearly, the Phonological Awareness Screening (PALS) and the Northwest Evaluation Association (NWEA) Measure of Academic Progress in Reading Assessment. Linear statistical models were used to analyze the impact of the program. Reading achievement growth between the intervention groups and the control groups were analyzed separately for kindergarten, first, and second grade students. Then the results of

all three grades were pooled to estimate the overall impact of the program. Results were as follows:

- Over a two-year period, students in the treatment group who received SPARK instruction and supports, had a 14-point increase in percentile rank on the Phonological Awareness Screening (PALS).
- Students in Grade 1 in the MCLP/SPARK program treatment group had a 14-point increase in percentile rank on the NWEA Measure of Academic Progress in Reading.
- Students in Grades K and 2 in the MCLP/SPARK treatment group did not show a significant difference on the NWEA Measure of Academic Progress in Reading.
- Both Cohort 1 and Cohort 2 treatment groups showed small but significant positive impact on reading achievement.
- MCLP/SPARK Cohort 1 and 2 results combined indicated an overall positive impact on reading achievement.

There were a number of factors not discussed or controlled for in this study, such as the following:

- Was there additional non-MCLP/SPARK phonemic instruction with the students in the control group?
- Was there a difference in the number of students needing academic instruction in later years between the two groups? What method of phonics intervention program was used with the control group?
- The type of core instructional method was not discussed in detail. How many minutes of instruction did students receive in the core reading program? What was the core program's theoretical base—systematic or balanced/eclectic phonics instruction?

- If the core program included systematic phonics instruction, what type of systematic phonics instruction—synthetic analytic, or linguistic?
- Were there controls for variation of teachers in the control group—experience, professional development, teacher quality/effectiveness, pedagogy?
- What types of monitoring and professional development took place for teachers of the core reading program?
- What types of monitoring and professional development took place for tutors? And how were the tutors selected?
- Was there variance in tutor's experience and professional development?
- How were parent partners selected, trained, and monitored?
- Researchers did not include ELL or special education students in this study.

The MCLP/SPARK study yielded significant results. However, further information on participating teachers, tutors, and parent partners, as well as types of instructional reading method in the core program, would have been beneficial. This study provided empirical evidence of the significant positive effects of the SPARK Reading program on literacy achievement and phonological awareness for Black and economically disadvantaged students, and these results may be generalizable. However, it is difficult to tease out the extent of the gains due to instructional method or the parent partner involvement. Additionally, were these gains sustained in later years? The beginning years of reading instruction focus on the act of learning *to* read, later years (Grade 3 and on) reading instruction focuses on learning *from* reading. Following the students' academic achievement through at least Grade 3 would have provided more information on the long-term effect of this reading program and whether the positive results would be sustained. The results may be generalizable to Black and economically

disadvantaged students. Future longitudinal studies to analyze the sustainability of these gains and studies that compare the MCLP/SPARK Literacy Program with other types of phonics programs are warranted, as well as studies on the SPARK Literacy Program that control for outside variables.

Open Court Reading Program (OCR)

The Open Court Reading Program (OCR) is a K-6 phonics-based core reading curriculum published by SRA/McGraw Hill that has been widely used since the 1960s. Although the publisher does not identify OCR as an analytic phonics program, this researcher categorizes it analytic phonics based on the description of activities. OCR teaches letter-sound associations with decodable text. The reading of text is not delayed until letter-sound associations are mastered, as in synthetic phonics. It also does not fall under a guise of a linguistic phonics program because it does not consistently teach students in the direction of first identifying phonemes and then their associated spelling patterns. In this program letters come first, and then their associated sounds, and in the direction of letter to sound. Analytic phonics programs rely heavily on students memorizing a bank of high frequency sight words. This program focuses on students building a sight words bank. For these reasons OCR falls under the guise of an analytic phonics program by this researcher. OCR is a widely used basal program in the United States.

Borman et al. (2008) conducted a comparison study of OCR and balanced/ eclectic literacy core programs with predominantly minority and impoverished students in Grades 1 through 5. The cluster-randomized research was conducted in 49 urban, suburban, and rural elementary school classrooms across the nation. The study followed teachers and students from the fall of 2005 to the spring of 2006. The research was conducted to answer the question: What

is the effect of OCR curriculum, materials, and professional development on literacy achievement as compared to balanced/eclectic basal reading programs?

The OCR curriculum had three main components: Preparing to Read, Reading and Responding, and Language Arts. Descriptions of skills developed in each of these areas are as follows:

- Preparing to Read – phonemic awareness, sounds and letters, phonics, word knowledge, and fluency
- Reading and Responding – building background knowledge, making predictions, thinking about text before reading, vocabulary, reading from the OCR anthology, and comprehension
- Language Arts – writing, grammar, mechanics, spelling, vocabulary, listening, speaking, and viewing

Curriculum materials included scripted direct explicit instruction lessons in the teacher editions; lessons are structured and follow specific routines around 6-week thematic units, diagnostic assessments, and pacing guides.

Professional development consisted of two to three days of initial training on pedagogy, materials, and practice sessions of instructional routines, as well as follow-up consultant visits. Consultants' follow-up visits consisted of modeling lessons, support in program implementation, classroom observations, and feedback.

This study was financed by SRA/McGraw-Hill, the publisher of the program. In order to recruit participants, SRA/McGraw-Hill offered free professional development and $3,000 in OCR materials for each participating school. The study was financed by the publisher and incentives for participation were provided; therefore, the study may have been biased. The final

study sample, after attrition, included five schools from states across the nation: Florida, Indiana, Texas, Idaho, and North Carolina. A multisite cluster randomized trial (with randomization at the classroom level) was conducted with 27 treatment classrooms and 22 control classrooms. Percentages of subgroups (ethnicity, economically disadvantaged, ESL, special education) were statistically equivalent across the comparison groups. A block randomization plan was used to improve statistical power and decrease unexplained variation and to ensure that classroom samples would be identical in grade level, school type, and composition.

Pre- and post-test measures used in this study were the CTBS/5, and the Terra Nova Vocabulary Reading Comprehension, and Reading Composite tests. Independent trained testers administered assessments in October of 2005 and in May of 2006. The means of classrooms were used to protect the identity of students. Consultants observed classes to check for fidelity to the program. Researchers noted that there was noteworthy implementation variation among participating OCR teachers. The results of this study were as follows:

- Overall outcomes showed a significant difference between the OCR groups mean scores and the control groups mean score. OCR students performed better on reading composite, reading comprehension, and vocabulary.
- OCR groups showed significant positive difference in every grade level except Grade 4.
- OCR students scored 12% - 19% of one standard deviation higher on the reading assessments than the control groups receiving eclectic/balanced reading basal core reading program instruction.

There were a number of factors to consider with this study, as well as limitations. They are as follows:

- OCR treatment classes were in the same schools as comparative control group classrooms. Cross-contamination is inevitable and hard to control.
- There was no discussion of teacher variation (in years of experience, licensing; licensing is different across states, pedagogy, etc.).
- The researchers reported variance in implementation; this could be the subject of future research.

This study yielded positive significant results in favor or the OCR program over balanced/eclectic basal reading programs. Because this study used a regionally diverse sampling with primarily economically disadvantaged and minority students, results may be generalizable to representing similar populations across the nation. Although this study attempted to control for fidelity to the program, it did not account for teacher variance. Future comparative studies of systematic phonics programs should include attempts at controlling for teacher variance.

The next section reviews two empirical studies on synthetic phonics programs

Research on Synthetic Phonics Early Reading Programs

Clackmannanshire Study of Jolly Phonics Reading Program

The Scottish government funded a 7-year study conducted by Johnston and Watson of St. Andrews University in Scotland (Johnston & Watson, 1997, 2005). The study took place in the county of Clackmannanshire with children from age 4/5 to 11/12. At the time of the study the population of Clackmannanshire was 48,000 and the main economic base agriculture and brewing. The majority of the students were considered economically disadvantaged. The purpose of the study was to determine the best way to teach reading and compared analytic phonics and synthetic phonics. Initially the study included 13 classes and lasted 16 weeks.

The study followed the same group of children throughout their elementary school years. Five classes were taught using synthetic phonics. Students rapidly learned six letter sounds in eight days. They learned how to write the sounds and how to blend them to read and spell words in daily 20-minute fast-paced lessons. The remaining classes were split into groups. One group was taught phonemic awareness orally without any reference to print; another was taught phonemic awareness without reference to print and analytic phonics, and a control group was taught only analytic phonics. The researchers were also interested in the speed of introducing phonemes and whether or on it made a difference to reading levels (Watson, 1999). The results of the Clackmannanshire study were as follows:

- Children who had been taught using the synthetic phonics approach were reading and spelling seven months ahead of the expected level for their chronological age.
- Children taught using the synthetic phonics approach were eight months ahead of the analytic phonics group
- Children taught using the synthetic phonics approach were seven months ahead of the other groups.
- Follow-up testing administered at the end of the school revealed that the advantage gap had widened for children taught using the synthetic phonics approach. They were 12 months ahead in reading and 14 months ahead in spelling.
- Children taught using the analytic phonics approach were reading one month behind the expected level for their chronological age and two to three months behind in spelling.
- Disadvantaged students taught with analytic phonics had the highest amount of underachievement.

- Disadvantaged students taught with synthetic phonics had the least amount of underachievement. Disadvantaged students taught with synthetic phonics turned out to have hardly any disadvantage with the synthetic phonics method.

The synthetic phonics program used in the Clackmannanshire study was Jolly Phonics. There have been numerous studies on the Jolly Phonics program. In each study, the results showed remarkable student achievement with all students, including ELL and special needs students (Burkard, 1996, 1999; Morgan & Willows, 1996; Stornelli & Willows, 1998; Kwan & Willows, 1998).

The limitations of the Clackmannanshire study are described in the questions below:

1. What accountability designation did the participating schools have? Were they high performing schools? Low performing? What was the student body comprised of?
2. What is the quality of teachers in these schools? Were they all highly qualified?
3. Was there teacher variability (based on years of teaching experience, professional development)?
4. What types of monitoring did teachers have to ensure fidelity to effectively deliver the programs?

The Clackmannanshire study yielded significant results. However, further information on participating teachers, schools, and students would have been beneficial. This study provided empirical evidence for one of the questions that the meta-analysis from the NRP could not answer: What kinds of phonics instruction work best? This study determined that synthetic phonics is a more effective approach than analytic phonics. Children could be taught 44 phonemes at a rapid pace in 12 to 16 weeks in 20-30 minute daily lessons, instruction could begin as soon as a child has enough phonemic awareness abilities to differentiate sounds, and

fast-paced direct explicit instruction in the synthetic phonics approach was more effective than analytic phonics for children who are at risk for reading problems. However, researchers suggested further research was needed to determine which type of synthetic phonics yielded the best results, and there were no linguistic phonics methods used as a comparison is this study.

Fast Phonics First Reading Program

The study conducted by McGeown & Medford (2014) examined the effects of instruction using a synthetic phonics approach on identified skills that predict early reading acquisition. The study took place in a high poverty level school. Participants were selected from two different instructional years and were grouped together for analysis. The students' mean age upon entering the study was 4 years and 7 months, and they had no prior reading instruction. Eighty-eight students took part in the study—46 girls and 42 boys. All were instructed using the interactive computer synthetic phonics program *Fast Phonics First* (Johnson & Watson, 1997). *Fast Phonics First* teaches students in whole class lessons via an interactive white board, to use sounding and blending techniques. Children received 40 minutes of instruction daily.

Students were tested three times on a number of reading skills that predict the skills that support initial reading development. The first testing session took place at the beginning of the school year before reading instruction took place. The second testing session took place six months later, and the third took place one year later. Students were tested individually according to the testing guidelines, and sessions were broken up into 10-15 minute sessions. The skills assessed included the following: letter sound knowledge, rhyme awareness, phoneme awareness, phoneme analysis, phoneme synthesis, vocabulary, short term memory, visual discrimination, regular and irregular word reading, and long word reading. The intent of the research was to determine if the method of instruction shapes childrens' reading strategies and future literacy

success. The researchers examined the synthetic phonics method with the Fast Phonics First program to see if the method of instruction predicted the skills that support beginning reading development and future literacy success. Results were split into three sections: descriptive statistics and *t*-tests, correlations, and regression analysis. The results of the study were as follows:

- Letter-sound knowledge and short-term memory span, both taught within the synthetic Fast Phonics First program, showed the strongest predictors and correlates for early word reading and early reading success.
- Phoneme awareness (taught in the Fast Phonics First program) rather than rhyme awareness predicts early reading success.
- Children rely heavily on verbal memory (phoneme identification) to retain grapheme (letters) memory. Both were taught in the Fast Phonics First synthetic phonics program.
- The method of early reading instruction, Fast Phonics First, positively impacted children's reading strategies and future literacy success.

Several limitations of this study include the following:

- Inability to control for teacher variance—years of experience in education in general, experience with the population studied, or the quality of the teacher.
- Lack of discussion on the amount of professional development teachers had with the Fast Phonics First program.
- Monitoring to ensure teachers were teaching the Fast Phonics program with fidelity
- Lack of comparison of different reading programs in this study; study authors stated further research comparing different types of early reading instruction was needed.

- Results may not be generalizable; this study took place in only one school.

The McGeown and Medford Synthetic Phonics study yielded significant results. However, further information on participating teachers and the core reading program taught in later years would have been beneficial. This study provided empirical evidence for one of the questions that the meta-analysis from the NRP could not answer: What types of phonics instruction work best? This study determined that synthetic phonics is an effective method of instruction for acquiring skills identified as predictors of future reading success.

Research on Linguistic Phonics Early Reading Programs

Magic Penny Study

In 2012 there was a study conducted on the Magic Penny Early Literacy Program. Casey, Cook-Cottone, and Baker (2012) investigated the effects of Magic Penny on phonemic awareness skills. Participants included 38 kindergarten students aged four to six-years old (16 males, and 22 females). The treatment group was comprised of students receiving intervention via the Magic Penny program. The control group did not receive the Magic Penny intervention program. For both groups the core instruction program was the Houghton Mifflin basal program. Participants were chosen on the basis of (1) teacher interest in the Magic Penny Program and (2) unfamiliarity with the Magic Penny program. The study took place in western New York in a K-5 public elementary school. The school had a total enrollment of 360 students at the time of the study. The majority of the students were Caucasian (81%). Forty-one percent were categorized as economically disadvantaged.

The dependent variables were basic reading skills and phoneme awareness. Letter-word identification and word attach subtests of the Woodcock-Johnson III Tests of Achievement (Woodcock, McGrew, & Mather, 2001) were administered to measure basic reading skills.

Sound blending and incomplete words subtests of the Woodcock-Johnson III Tests of Cognitive Abilities (Woodcock, McGrew, & Mather, 2001) were administered to measure phonemic awareness. An experimental longitudinal study design was used to determine the effects of the Magic Penny intervention. A pretest/post design was used.

All participants in this study received core reading instruction using the Houghton-Mifflin basal reading series (Houghton Mifflin, 2003). Students in the intervention group received an additional 20-30 minutes of daily instruction using the Magic Penny program as an intervention. The control group did not receive additional Magic Penny instruction beyond the Houghton Mifflin reading program.

The results of this study were mixed. There was a significant difference with the experimental Magic Penny group in basic reading skills; they outperformed the control group. However, there was no significant difference in phonemic awareness. The basic early reading skills of the Magic Penny treatment group were 4.42 standard score points higher than the control group. Magic Penny treatment group scores had a mean of 123.21 with a standard deviation of 10.60. The control group scores had a mean of 122.0 with a standard deviation of 10.3. In phonemic awareness the Magic Penny intervention group's mean score was 107.42, with a standard deviation of 15.1. The control group's mean score was 109.89, with a standard deviation of 10.41.

The basis of the Magic Penny Reading Program is phonemic awareness and phonics; therefore, the results of insignificant differences in the means of the control group and treatment group on phonemic awareness is perplexing. The researchers who conducted this study explained this phenomenon might be due to the fact that the assessment tools might not be appropriate or sensitive to the incremental changes over a short period of time or closely aligned to the Magic

Penny program itself. The authors concluded that more controlled and extensive research is needed to more accurately assess the effectiveness of the Magic Penny Literacy Program.

There were a number of factors not discussed or controlled for in this study. A number of questions remain:

- What was the reasoning behind the students chosen for the intervention?
- What were the students' cognitive functioning levels?
- The breakdown did not include all subgroups. It only included two district subgroups (Caucasian students and percent economically disadvantaged), and there was no subgroup group breakdown for the study participants. Were there other participant variables that might impact student achievement, such as ELL, special education identification, economically disadvantaged, etc.?
- Was there additional non-Magic Penny phonemic or phonics instruction with the students in the control group?
- Was the training and experience of the teacher delivering the Magic Penny treatment extensive enough to deliver instruction with fidelity to the program?
- Were there outside factors, such as afterschool programs or parent support/instruction, which could account for differences in results?
- Is three months of instruction enough to show significant gains in student achievement?

Although the results were mixed, this study did show some significant differences between the groups and overall favored the Magic Penny Early Literacy Reading Program. Further information on the participants may have shed some light on the score results.

Ireland Gray Comparative Study of Linguistic Phonics and Synthetic Phonics

Ireland's Belfast Regeneration Office and Belfast Education and Library Board (BELB) commissioned and funded a three-stage test/retest matched samples comparative study conducted by Gray, Ferguson, Behan, Dunbar, Dunn, and Mitchell through Stranmillis University College in Northern Ireland (Gray et al., 2007). The study took place within a number of primary schools in the area of Belfast with children with a mean age of 5 years and 9 months for Year 2 students, and 6 years and 9 months for Year 3 students.

The intent of the research was three-fold: identify the impact of the linguistic phonics approach (LPA) on students' reading performance as compared to non-LPA, determine if there was sustainability of gains made across the school year, and investigate within-and-between-group differences between high-, middle-, and low-ability readers. The dependent variable was early literacy skills as measured by the word Recognition and phonics skills test (WraPS). The independent variable was method of instruction.

The authors of the study described the LPA program as being a period model that builds upon the skill levels of oral language in listening and speaking with which each child enters school. Listening, attention, and oral language are the base of this pyramid model, upon which comprehension skills are built. Then the next layer is developing awareness of syllables, rhyme, alliteration, and oral segmenting, blending, and the manipulation of phonemes. The instructional approach includes modeling, guided reading, and shared reading. Decoding and comprehension skills are to be developed in tandem. The LPA model in this study was implemented in six stages: (1) yellow stage: children learn one sound that is associated with one letter. (2) orange stage: children learn longer words using the one letter with its associated sound. (3) blue stage: children learn blocks of sounds (called syllables) and their associated spelling in multi-syllable

words. (4) green stage: children learn that sounds can be represented by more than one letter (5) red stage: children learn that a sound can be represented in more than one way and vice-versa, and they learn to categorize sounds. (6) purple stage: children learn longer words, schwa vowel sounds, prefixes, and suffixes. They learn multi-syllable words and orthographic tendencies.

The two methods of instruction were employed for 10 weeks in the beginning of the 2004-2005 school year with LPA and non-LPA instructional methods. LPA schools were matched with non-LPA schools based on several indicators: socioeconomic status of the school, pedagogical approach, school size, and type of school—coeducational or single-sex). Twelve schools were included in the study—six LPA and six non-LPA. There were 745 student participants; 466 students were instructed using LPA, and 278 students were instructed using non-LPA. A test/retest model was used. Whole-groups tests were administered providing a standardized score that measured word recognition and phonics skills. Students receiving additional support services and/or special education services were noted. The post test was June 2005, and the sustainability post-test was September 2005. The LPA schools had more identified special education students than the non-LPA schools. These students were removed from the total of students participating in the study, but were rigorously analyzed separately to prevent skewing of the overall results. The findings of this study showed the following:

- There were significant differences found in student achievement in favor of the non-LPA group. However, the pattern changed as the year progressed. The initial advantage of students instructed with non-LPA programs was not sustained. As time progressed, the LPA group significantly outperformed the non-LPA group and the gap continued to widen with time. This study confirms previous research; students taught in systematic approaches consistently outperform students taught with non-

systematic approaches (Brooks, 2003; Torgerson, Brooks, & Hall, 2006; Gray et al., 2007).

- LPA students of high, middle, and low performance abilities consistently outperformed their non-LPA peers. This approach benefited students of all ability levels.
- Special needs students instructed with the LPA consistently outperformed their non-LPA peers.
- No significant difference was found for students receiving additional reading supports, suggesting that LPA used alone or in conjunction had positive

effects on student reading performance. This study provided evidence that LPA used in isolation or in conjunction with other programs benefits young children.

Several limitations of this study include the following:

- Lack of control for teacher variance - years of experience in education in general, or experience with the population studied, the quality of the teacher.
- The researcher did not discuss the amount of professional development teachers of either group had with the respective programs they taught.
- The researcher did not discuss the amount of times students were instructed with each program or levels of fidelity.

The Gray et al. study yielded significant results. However, further information on participating teachers, schools, and students would have been beneficial. This study provided empirical evidence for one of the questions that the meta-analysis from the NRP could not answer. What kinds of phonics instruction work best? This study determined that linguistic-phonics was a more effective approach than the compared systematic approach. Children could

be taught 44 phonemes at a rapid pace in ten weeks of daily lessons. However, researchers suggested further research was needed on this LPA program, as it was the first and only evaluation of the approach to teaching beginning reading, as well as comparative studies of LPA against other linguistic phonics programs. Further research is warranted to determine sustainability of results of this type of program and support the veracity of their claims.

Summary

This chapter provided an historical overview of literacy, a comparison of literacy rates over the years in the United States and internationally, an explanation of three types of systematic phonics instruction, and empirical research on each of the three types of systematic phonics instruction. All studies included samples of at-risk student populations, specifically Black and economically disadvantaged students. All studies determined that systematic phonics instruction had a greater positive impact on student achievement than eclectic/balance reading basal phonics programs.

The Ireland Gray Linguistic Phonics Study matched schools based on several indicators, providing a basis for comparing students in this current study based on similar indicators. The Clackmannanshire study also served as a basis for comparing students in the current study, as the results with the Jolly Phonics program showed remarkable student achievement with all students, including all student subgroups. This current study examines the indicators of socioeconomic status, ELL, special education, and ethnicity as well. The Open Court study lacked controls for teacher variance, thus guiding this current study to attempt to control for teacher variance. All studies reviewed are systematic phonics instructional methods. However, the question still remains: Which method of systematic phonics instruction program is the most effective program for increasing literacy achievement and which method has the greatest long-term impact?

Additionally, there is limited research on linguistic phonics programs, and Magic Penny is one of the very few linguistic phonics programs available. This study seeks to fill the gap of existing knowledge on linguistic phonics reading programs and which systematic instructional method is most effective for the acquisition of early reading skills and future reading success. Chapter 3 reviews the methodology used to compare the Magic Penny Linguistic Phonics Program and a basal reading phonics program.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

Chapter III includes information regarding research method design, appropriateness of the methodology used, the research questions and hypotheses, description of the setting, description of the population from which samples were derived, and a description of the dependent and independent variables. The data collection procedure and the applied statistical analysis methods are explained. Chapter III concludes with a summary.

Researcher's Background

The researcher has extensive experience in the field of public education. She earned a dual Bachelor of Science degree in General Education (PK through Grade 6) and in Special Education, with a concentration in learning and behavioral disorders and art therapy, from State University College at Buffalo, New York. Her experience includes teaching at all grade levels from pre-kindergarten to high school, from least restrictive learning environments (resource room teacher) to most restrictive learning environments (middle and high school alternative school 6:1:1 self-contained teacher of students identified as emotionally handicapped-aggressive). This provided her with comprehensive knowledge of horizontal and vertical alignment of curricula, as well as the complexities of social, emotional, and developmental stages of children at all ages.

Michelle realized reading was the most prevalent disability and most frequently misdiagnosed early in her career. Hence, Michelle earned a Master of Professional Science as a reading specialist with a concentration in early literacy from State University College at Buffalo, New York. During her tenure as a reading specialist, she further sub-specialized in the area of phonics. For several years she provided early literacy professional development to school districts in western New York. She then earned her Certificate of Advanced Studies as both a School Building and School District Administrator, also at State University College at Buffalo, New York. She has held positions at the building level (assistant principal and principal), department level (reading coordinator), and central office level (supervisor). She currently serves as Supervisor of Data Analysis in the Office of Shared Accountability of the Buffalo Public Schools. She has vast experience and expertise built upon 30 years in the field of education working in a multitude of capacities with all populations and grade levels in various educational settings, in urban, suburban, and rural settings.

This research study was conducted, and this resulting thesis was prepared in partial fulfillment of the requirements for completion of an Educational Doctorate Degree (EdD) in Educational Leadership and Management at Seton Hall University, South Orange, NJ.

Research Design

This design of this quantitative research study is causal-comparative. This design is suitable for groups that are or are not exposed to an intervention (the independent variable) and the dependent variables can be measured based on exposure to the independent variable (Gall, Gall, & Borg, 2007).

Research Questions

Overarching Research Question

Does the type of literacy instruction in Pre-K (Magic Penny vs. Houghton Mifflin) predict academic short-term outcomes in kindergarten and long-term outcomes in Grade 3, and to what extent are relationships moderated by demographic variables (gender, economic status, ELL, and race/ethnicity)? The academic outcomes in this study were measured by the following:

- DIBELS assessment - kindergarten
- DIBELS assessment - grade three
- NYSTP in ELA - grade three

Subsidiary Research Questions

1. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in kindergarten (measured by DIBELS Grade K)?
2. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by DIBELS Grade 3)?
3. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by NYSTP ELA Grade 3?

Hypotheses

$H1_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in kindergarten DIBELS proficiency.

$H1_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in kindergarten DIBELS proficiency.

$H2_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in Grade 3 DIBELS proficiency.

$H2_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in Grade 3 DIBELS proficiency.

$H3_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in NYSTP Grade 3 ELA proficiency.

$H3_a$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does predict differences in NYSTP Grade 3 ELA proficiency.

Context/Setting

A large school district in New York State was selected for this study because it is one of a few districts across the country that piloted a linguistic phonics program as a core pre-kindergarten reading program. Additionally, the district was selected because a substantial amount of extant data could be provided to represent a varied population in the two instructional programs. The school district is designated a Title 1 economically deprived district, serving many high-need at-risk students, including a sizeable immigrant population.

The major economic sectors in the region of New York State in which the district is situated include service industries, industrial, healthcare, research, and higher education. In 2016, the population estimated over 80% of the citizens aged 25 or older are high school graduates or higher, and approximately 25% have a bachelor's degree or higher, with approximately 30% percent of persons in poverty (U.S. Census Bureau). This school district had many elementary schools during the 2009-2010 through 2016-2017 school years. Four

elementary schools utilized the Magic Penny Early Literacy Program in pre-kindergarten from 2009-2010 through 2014-2015. The rest of the district elementary schools implemented the Houghton Mifflin literacy program with their pre-kindergarten students.

The outcomes of the kindergarten and Grade 3 DIBELS assessments were compared to see if type of literacy instruction in pre-kindergarten predicted academic outcomes. The outcomes of subgroup categories (Black vs. non-Black, ELL vs. non-ELL, economically disadvantaged vs. non-economically disadvantaged, and males vs. females) were also compared to see if they predicted differences between the two groups.

Population

The student population in this district was consistent from 2009-2010 through 2016-2017 school years, with a total student population of over 30,000 pre-kindergarten through Grade 12 students each year, and a pre-kindergarten student population of over 2,000 students each year. The ethnicity breakdown for this school district remained relatively consistent from 2009-2010 through the 2016-2017 school years. The ethnicity breakdown through these years was as follows: Black–average approximately 53%; White–average approximately 22%, Hispanic – average approximately 16%; and Other–average approximately 8%. The subgroup of economically disadvantaged averaged approximately 80%. The subgroup of ELL averaged approximately 13%. The subgroup of special education averaged approximately 22%.

Procedures

A "Request to Conduct Research" application was required by the school district. After submitting IRB approval, the application was approved by the district's Chief Accountability Officer and Chief Information Officer. Participants did not need to be notified, nor was signature

to participate in research required because only archived de-identified data for both teachers and students were utilized in this study.

A USB thumb drive with two Excel templates (with identified fields to be populated) was submitted to the district—one template for pre-kindergarten staff demographic and professional development data for school years 2009-10 through 2014-15, and one template for student demographic and academic data for students who attended pre-kindergarten from 2009-2010 through 2014-2015. Additionally, the district's Reading Department administrators were contacted to determine which schools received the pre-kindergarten Magic Penny intervention for 2009-2010 through 2014-2015. After the request was approved, the researcher then met with a district information technology specialist to clarity the parameters of the data fields in the two templates.

First, the staff Excel template was populated. Pre-kindergarten staff data fields included the following: school years taught pre-kindergarten, school, teacher attendance, participation in Magic Penny professional development, and whether their school was a Magic Penny pilot school or not. Next, the pre-kindergarten student template was populated. The student data fields included the following: year in pre-kindergarten, school, teacher, demographic information, attendance, enrollment, beginning of the year CIRCLE pre-kindergarten scores, DIBELS scores in kindergarten, DIBELS scores in Grade 3, NYSTP in ELA Grade 3 scores, and whether or not they received the Magic Penny intervention treatment. Verifications for accuracy by the district information technology specialist and the researcher were made.

Findings from Creswell (2003) specify that purposeful participants are essential for quantitative methods to ensure the most valid and reliable research results. Therefore, students whose teachers participated in a Magic Penny pilot but were not in attendance the full school

year, and/or did not receive ten or more hours of Magic Penny professional development were deleted from the pre-kindergarten staff template. Students identified as being in a school that piloted the Magic Penny program who did not receive the full Magic Penny intervention (enrolled later in the school year or withdrew from school) were deleted from the student template. All special education students, whether they received Magic Penny or not, were removed from the data set, as well as students who did not receive a full year of pre-kindergarten instruction. The student demographic profile is presented in Chapter IV. Verifications for accuracy by the district information technology specialist and the researcher were, again, made.

The control group (students instructed in pre-kindergarten with the standard basal Houghton Mifflin program) and intervention group (students instructed in pre-kindergarten with Magic Penny) were identified and coded with either 0 or 1, respectively as well as other data fields. Teacher and student names and identification numbers were coded to protect identity. Digital data coding was verified for accuracy by the researcher and professor/dissertation team. After the Excel templates were verified for correctness, the student data Excel file was uploaded into SPSS to answer all questions in the research study. Data were accessible only to the researcher and were provided to the dissertation committee statistician members on an as-needed basis. No information that would identify individual teachers or students was retained in the SPSS files. All Excel and SPSS data files used for this study are stored on a USB flash drive stored at the researcher's home in a locked cabinet. The researcher's computer is also password-protected. The student demographic profile is presented in Chapter IV.

Sample

There were approximately 30 schools included in the sample. The sample was homogenous in the characteristic of economically disadvantaged; the schools were all identified

as Title 1 schools, and the majority of the students in this study were identified as economically disadvantaged. Four schools with extant data from nine pre-kindergarten teachers were included in the intervention group. The control group sample contained extant data from remaining schools in the district. The extant data collected for the sample for both groups spanned 2009-2010 through 2017-2018 school years. Extant data from schools that served special needs populations, criterion entry schools for the gifted and talented, and specialized bilingual schools were removed from the pool of schools from which the samples were drawn.

The total sample size for this study is 594. The intervention group consisted of 297 students that received Magic Penny instruction in pre-kindergarten in any of the years from 2009-2010 through 2014-2015. The control group consisted of 297 randomly selected pre-kindergarten students who received instruction in the Houghton Mifflin Pre-Kindergarten Literacy Program. Due to attrition and/or missing test scores, the total sample size to answer subsidiary question #1 was reduced to 510. The total sample size to answer subsidiary question #2 was 310. The total sample size to answer Subsidiary Question 3 was 250. While there was attrition in both groups from kindergarten through Grade 3, there were ample sample sizes for statistical analysis.

In studies that do not have randomization for both the intervention and comparison group and studies that have high attrition rates, it is important to determine if the two groups have enough similar characteristics (What Works Clearinghouse, 2015). This study did not have randomization for the Magic Penny intervention group; historically pre-kindergarten students have high attrition rates; therefore, determining baseline equivalence is warranted. Chi square analysis was performed to identify existing characteristics that may impact outcomes. The results of the chi square analysis are included in Chapter IV.

Intervention Group

Four elementary schools in the district piloted the Magic Penny Early Literacy Program in pre-kindergarten from 2009-2010 through 2014-2015. Data were retrieved from nine pre-kindergarten teachers who received ten or more hours of Magic Penny professional development and instructed the Magic Penny program the full school year. Extant data, from pre-kindergarten teachers in the pilot schools who did not receive 10 or more hours of professional development in the Magic Penny program and/or did not instruct the full school year (maternity leave, medical leave, etc.), were excluded from the sample from which to draw the intervention group for this study. Extant data from students who were not present for the full Magic Penny program in pre-kindergarten did not remain in the school district through kindergarten, or were identified as receiving special education services, were not included in the sample for the intervention group. The intervention group consisted of extant data from 297 students who received pre-kindergarten instruction in the linguistic phonics program (Magic Penny) for any of the school years from 2009-2010 through 2014-2015. The student demographic profile is presented in Chapter IV.

Control Group

The control group consisted of extant data from 297 randomly selected pre-kindergarten students who received instruction from the basal phonics program (Houghton Mifflin). Random selection was calculated by using a ratio of the intervention group and control group populations. The ratio was determined by dividing the total control group population (8,669) by the number of student data files in the intervention group (297), which equals 29. A random number between 1 and 29 (18), was selected. The first student data file selected for the control group was the 18th

file in the control group, and thereafter every 29th file was selected for the control group until 297 randomly selected files were obtained. The total sample size for this study is 594. The student demographic profile is presented in Chapter IV.

Informed Consent/Parent Permission

No data were collected from study participants, the data already existed and were housed in the school district's databases. The district provided all student data in Excel format and coded to protect student identity. Parent permission is not required to take part in this study because all extant student data were coded for confidentiality. Student populations receiving both the Houghton Mifflin and Magic Penny Literacy programs are large enough to secure confidentiality of students and teachers.

Description of Instructional Programs

In this district all pre-kindergarten teachers were to deliver approximately 70-90 minutes of literacy instruction, and all pre-kindergarten classrooms have a full-time teacher aide. The teacher aides work with students on reinforcement activities while the teacher delivers small group instruction. In addition, it is mandated that all pre-kindergarten classrooms in the district are to have the following theme-based learning/practice areas: library, writing, math/manipulatives, dramatic play, blocks, listening, sand/water manipulative play station, art, computer, and science.

Intervention Group Instruction - Overview of Magic Penny Program

Skills Development Rationale

Magic Penny is a core reading program designed for the teaching of reading through a linguistic phonics approach for pre-kindergarten through Grade 2. It does have another component designed for response to intervention (RTI). This component is not part of this study,

is an intervention for Grades 3 and above, and is not a core program. There is a separate Grade 7-12 core reading program as well, but it is not discussed because it is not within the scope of this study. Magic Penny is designed to teach phonics from the direction of learning to differentiate sounds first, and then their associated letter(s). Direct explicit instruction in phonemic awareness takes place first, then is followed by systematic and phonemically-based instruction covering the basic codes (letter and sound associations), and then the advanced code (irregular spellings). Multisensory games, songs, animations, apps, decodable readers, and activity books are used. The program also addresses vocabulary development, comprehension, and spelling, using a systematic and sequential method.

Illustrations and Content

The *Alpha Animals*™ basic code skill development books (levels B, C, and D) systematically teach beginning phonics, comprehension, and spelling skills with games and activities. Nine decodable readers are introduced in class and then taken home for reinforcement and fluency. The advanced code, comprehension, and spelling are systematically taught in *Magic Penny Reading Secrets Book One* (level E), containing comprehension activities, games, and 10 decodable reading books, and in *Magic Penny Reading Secrets Book Two* (level F). Level F is accompanied by *The Adventures of Peanut Butter and Jelly*, a 30-chapter book. *The Secrets of the Symbols* skill book and card set is designed for use as an intervention with older children who are struggling. Using an ancient Egypt theme, it incorporates games and activities to guide a more advanced reader (older child) through phonemic awareness and the basic and advanced codes, using age-appropriate vocabulary, illustrations, and activities.

Materials Used

- Magic Penny criterion-referenced *Phonemic Reading Assessment* (digital assessment application to place children in their instructional level, monitor their progress, and provide analytics)
- A Daily Monitoring/Lesson Planning tool
- Interactive Applications (one Phonemic Awareness App and two Basic Code Apps) that focus on vocabulary development, blending, segmenting, sound/letter correspondence, left-to right tracking, reading words, and reading comprehension with digital books
- Songs that introduce 30 basic sound/letter correspondences with animated *Alpha Animals*™ videos.
- Phonemic Awareness activities:
    - Early Start Cards and Game Boards for vocabulary development and phonemic awareness training.
    - Animal Kingdom Cards for beginning sound matching games and vocabulary development.
    - Sound Sorting Kit for games designed for reinforcing phonemic awareness and critical thinking
- Interactive white/smart board activities in support of Magic Penny reading levels A-F.
- Teacher Manipulatives: 7 flip books (*Alpha Animals*™ and *FUNd'mentals*) and games/activities (sound/letter matching, story sequencing/retelling, sentence and picture matching, sentence building, Making Word Houses, WORD BINGO, Upper and Lowercase Letter matching)

- Skill Books - 6 sequential, systematic skill development books with games and manipulatives, 19 decodable readers, and one 30-chapter book.

Evaluation

- On-line Phonemic Reading Assessment application. It enables teachers to formally assess 3 times a year. The reporting system creates results individual student, class, grade, and school.
- Daily Monitoring/Lesson Planning Charts are used to monitor student progress, group/regroup students, and provide lesson planning.

Magic Penny daily instruction begins with a whole class *Alpha Animals* sing-along, and then follows with small-group instruction and/or individual skill practice. Children are grouped based on the Magic Penny assessment. While the teacher works with a group, the teacher's aide works with another group on reinforcement activities learned prior in small group instruction. The other children work independently on Magic Penny games either at stations, at their desk, at a table, or on the floor. One of the stations is on the computer, where students log on to continue their progress independently using the Magic Penny applications. Students rotate through all of the stations daily. The timeframes for each instructional activity are outlined below:

- 20 minutes of whole group instruction which include the use of the Smart Board, games, songs, or the applications
- 20 minutes of direct explicit small group instruction (no more than four students)
- 15 minutes of independent work on the computer using the program applications
- 15 minutes of independent practice using games or activities at centers in the class
- 15 minutes of work with the teacher's aide

Control Group Instruction - Overview of Houghton-Mifflin Program

Houghton Mifflin core basal phonics program is designed for the teaching of reading through a balanced reading approach for pre-kindergarten through Grade 6. It is designed to teach phonics from the direction of learning the letters of the alphabet first, and then their associated sound(s). Daily instruction is flexible, depending on the teacher's assessment of student needs. Typical literacy instruction is comprised of 70-90 minute blocks of time. Instructional activities include the following:

- Small group instruction
- Whole group instruction
- Independent work–reinforcement activities in learning stations or seat work

Reading instruction in the Houghton Mifflin program is arranged around 10 themes; i.e., "in the city" and "in the country" theme, "feelings" theme, "making friends" theme. Skills are introduced within themes and build sequentially. Skills include phonological awareness, letter knowledge, comprehension, oral language vocabulary, book/print awareness, writing, and fluency. Instructional materials consist mainly of big books and teacher read-aloud books. Letter knowledge, listening comprehension, vocabulary, and oral language are major components of this program. This program focuses on teaching letter recognition first, and then their associated sounds.

Instruction begins with daily whole group "circle" time. The teacher reads a big book and models identifying the beginning letters, and/or uses interactive white board activities. After whole group instruction, the teacher then works with small groups while the students reinforce skills at the stations. The teacher groups and regroups students based on observations of acquired skills. There is no formal evaluation system used for grouping students. The program uses the

"stop and go" method. In this method the teacher shows a word, tells the student to stop at the first letter and try to make its sound. There are suggestions for stations. With this program, questions asked include: What letter is this? What sound does it make? Can you help me figure out what sound this letter makes? Can you make this letter? Materials for students are hands-on manipulatives, such as foam letters and stamps.

Variables

Dependent Variables

The dependent variables in this study are academic literacy outcomes. There are three academic outcomes that measured academic literacy proficiency, one that measures the short-term relationship between the two pre-kindergarten programs and two that measure the long-term relationship/sustainability between the two pre-kindergarten reading programs. The academic outcomes were measured by the DIBELS assessment in kindergarten, DIBELS assessment in Grade 3, and the NYSTP in ELA Grade 3. Instrumentation and dependent variables are listed in Table 4.

Independent Variables

The independent variable is the type of phonics instructional program received in pre-kindergarten—the linguistic phonics program (Magic Penny) or the basal phonics program (Houghton-Mifflin). The covariates/moderators are the subgroups (gender, economically disadvantaged vs. non-economically disadvantaged, Black vs. non-Black, White vs. non-White, Hispanic vs. non-Hispanic, Multi-Racial vs. non-Multi-Racial, and ELL vs. non-ELL). The independent variables are listed in Table 4.

Measurements/Instrumentation

CIRCLE Pre-kindergarten Screening Assessment

The CIRCLE pre-kindergarten assessment is electronically administered three times a year—beginning of the year (BOY), middle of the year (MOY), and end of the year (EOY)—to all pre-kindergarten students in this school district. CIRCLE measures early literacy skills and takes approximately five minutes to administer. This screening assessment provides information on the phonemic and phonic skills that the students have upon entering pre-kindergarten. The skills measured include letter naming, vocabulary naming, listening, rhyming, alliteration, words in a sentence, syllabication, and onset rime (CIRCLE Group, 2004). The students' CIRCLE proficiency was used to determine baseline equivalency between the two groups in this study.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Assessment

The DIBELS assessment (Good & Kaminski, 2002; Good et al., 2013) is electronically administered three times a year—beginning of the year (BOY), middle of the year (MOY), and end of the year (EOY)—to all kindergarten through Grade 6 students in this school district. DIBELS measures the dependent variable, early literacy skills, and takes approximately three minutes to administer. The skills measured include first sound fluency (FSF), letter naming fluency (LNF), phoneme segmentation fluency (FSF), nonsense word fluency (NWF), oral reading fluency (DORF), and comprehension in Grade 3. Initial sound fluency, phoneme segmentation, and nonsense word fluency are measured in kindergarten (note skills assessed depend on the grade and the time of year). Initial sound fluency measures a student's ability to identify a sound in a word when given orally. Four pictures are shown to the student, and the student must identify the picture that begins with a given sound. It is a timed test and is measured by the correct number of sounds identified per minute.

Phoneme segmentation fluency measures a student's ability to segment a three or four phoneme word. When given a word orally, students must separate the word into each individual phoneme. One point is given for each correct phoneme. This test is measured by the number of correctly segmented phonemes within one minute. Nonsense word fluency measures a student's ability to identify the phoneme that each letter makes within a nonsense word. Nonsense words are presented with VC and CVS patterns, and students are asked to pronounce the whole word or each individual sound in the word. This test is measured by the number of sounds correctly read in one minute. The DIBELS assessment scores are used to predict literacy proficiency levels in kindergarten and Grade 3 between the two groups.

Grade 3 New York State Test of Performance in ELA (NYSTP)

In New York state, students in Grades 3 through 8 are administered the ELA/Literacy Common Core test (NYSTP ELA) every spring. This summative assessment is intended to provide measures of student proficiency in the literacy skills and knowledge that students need to succeed in college and careers. There are four levels of proficiency in which students may score: Level 1–well below proficient, Level 2–below proficient, Level 3–proficient, and Level 4–above proficient (Engage New York). For the purpose of this study, the dependent variables were collapsed into two variables (proficient or not proficient) The collapsed variable was used to predict literacy proficiency levels in Grade 3 between the two groups.

Table 4

Instrumentation and Variables

Variables		Measurement	Status
Assessments	DIBELS K	1=proficient 0=not proficient	Dependent
	DIBELS 3	1=proficient 0=not proficient	Dependent
	NYSTP ELA 3	1=proficient 0=not proficient	Dependent
Type of Pre-kindergarten program	Linguistic (intervention)	1=Magic Penny	Independent
	Basal (control)	0=non-Magic Penny, Houghton Mifflin	
Student Characteristics	Gender	1=female 0=male	Independent
	Economic Status	1=economically disadvantaged 0=non-economically disadvantaged	Independent
	ELL Status	1=English language learner 0=non-English language learner	Independent
	Black	1=Black 0=non-black	Independent
	White	1=White 0=non-white	Independent
	Hispanic	1-Hispanic 0=non-Hispanic	Independent
	Multi-race	1=Multi-race 0=non-Multi-race	Independent

Note: NYSTP ELA is abbreviation for New York State Test of Performance in English Language Arts. AIS is abbreviation for Academic Intervention Services.

Data Collection

The school district provided all extant student and staff data extracted from district data-bases. Data fields to be collected on each student include the following: coded pre-kindergarten student identity, gender, race/ethnicity, economic status, ELL status, special education status, CIRCLE proficiency scores, DIBELS kindergarten proficiency scores, DIBELS Grade 3 proficiency scores, NYSTP ELA Grade 3 proficiency scores, whether or not a child received academic intervention services (for each grade from kindergarten through Grade 3), attendance rate (for each grade from pre-kindergarten through Grade 3), and number of suspensions (for each grade from kindergarten through Grade 3). School curriculum programming and pilot participation data were retrieved by the district Reading and Early Childhood Departments. District and school demographic data were obtained by New York State district and school

publicly accessible report cards (nysed.gov). No other data were collected from participants in this study. The researcher has had no contact with any participant in this study. All extant data were coded to protect the identity of the students, schools, and staff.

Data Analysis

Chi Square

To determine baseline equivalence, preliminary chi square analysis was performed on basic demographic variables as well as the students' entering skill sets, as measured by the CIRCLE pre-kindergarten assessment.

Binary Logistical Regression

To answer the primary overarching research question and its subsidiary questions (Questions 1, 2, and 3), binary regression statistical analysis was conducted. Regression models of analysis seek to explain or predict the probability of an event occurring. This study seeks to predict the probability of proficiency on literacy assessments based on type of phonics instruction received in pre-kindergarten and based on student characteristics. Regression models, such as simple linear regression, multiple regression, and nonlinear regression use quantitative variables. The data for quantitative regression models have normal distributions and are curvilinear. The data to answer the primary overarching question and Subsidiary Questions 1, 2, and 3 are binary (0=not proficient, 1=proficient, 0=not proficient,) and involve group membership (1=instructed with Magic Penny intervention, 0=not instructed with Magic Penny intervention), and covariate membership (1=economically disadvantaged, 0=not economically disadvantaged). These data do not have a normal distribution. Binary logistical regression is the model used in this study. The goal is to create linear combinations of independent variables of the log of odds. This logistical regression allowed the researcher to identify the magnitude of

independent variables (gender, economic status, ethnicity, and ELL status) of the association with literacy academic achievement and method of instruction. The model explains the probability of literacy proficiency rates associated with type of pre-kindergarten instruction. There are several assumptions of the logistical regression model, and this study does not violate these assumptions.

Assumptions of Binary Logistical Regression

Assumptions of logistic regression are as follows:

1. Dependent variables are measured on a dichotomous scale. In this study, hypothesis questions can be answered with either "yes" or "no" (coded as "0" for not obtaining proficiency in academic outputs, or "1" for obtaining proficiency in academic outputs).
2. Has one or more independent variables. This study has more than one independent variable—two types of pre-kindergarten phonics instruction methods (coded as "0" for not receiving the linguistic phonics Magic Penny intervention in pre-kindergarten, or "1" for receiving the linguistic phonics Magic Penny intervention in pre-kindergarten).
3. Observations are independent of each other; they do not come from repeated measurement and the dependent variable has mutually exclusive categories. In this study, students receive one assessment output independent of others, and either they score proficient or not proficient.
4. There is to be little or no multi-collinearity among independent variables. Independent variables were tested to see if they are highly correlated with each other. The assumption of little or no multi-collinearity was not violated.

5. There must be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable. In this study, this assumption was verified by using SPSS statistics.
6. Homoscedasticity (having the same scatter plot) is not required.
7. There is a large sample size (at least 10 cases for the least frequent outcome for each independent variable in the models). This study has a sample size of 594. Each of the models has at least 10 cases for the least frequent outcome for each independent variable.

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

The study design consisted of three separate logistical regression models to answer the three research questions. Chi square data (CIRCLE pre-kindergarten assessment scores and basic demographics) from comparison groups were collected and analyzed at each level of the study to ensure the groups were comparable.

Binary logistical regression was used to test the questions entailing the prediction of literacy academic achievement based on type of pre-kindergarten phonics instruction and student characteristics.

The logistical regression models present findings on literacy achievement from multiple angles, specifically how student gender, ethnicity, economic status, and ELL status relate to literacy proficiency, prediction of academic achievement based on type of pre-kindergarten literacy proficiency, and short- and long-term sustainability effects. Variables were coded to

distinguish differences in student characteristics. A $p<.05$ level of significance was used for analysis in this study to determine if the variable had significance in explaining the academic outcomes.

Preliminary analysis was conducted to determine "goodness of fit" for each model according to the Omnibus Tests of Model Coefficients. The degree of variance among the models with logistical regression was tested using SPSS statistical software according to Cox & Snell *R* Square and Nagelkerke *R* Square.

Summary

This chapter reviewed the research approach and design, questions and hypotheses, context and setting, population, sample, consent and parent permission, descriptions of treatment and control groups, variables, instrumentation, data collection, data analysis, and fit for binary logistical regression analysis. The assumptions of logistical analysis and the verification that this study does not violate the assumptions were also included. Chapter IV reviews and interprets the results of the statistical analysis to determine whether hypotheses were supported. A detailed analysis of the data, the findings, and conclusion is presented in Chapter V.

CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy outcomes and for which subgroups of children.

The overarching question for this study was as follows: Does the type of literacy instruction in Pre-K (Magic Penny vs. Houghton Mifflin) predict literacy outcomes in kindergarten and Grade 3, and to what extent are relationships moderated by demographic variables (gender, economic status, ELL, and race/ethnicity)? The academic outcomes in this study were measured by the DIBELS assessment in kindergarten and Grade 3, and the Grade 3 NYSTP in ELA).

This study did not have randomization for the Magic Penny intervention group. Historically, pre-kindergarten students have high attrition rates, therefore determining baseline equivalence was warranted. Chi square analysis was performed to identify existing characteristics that may impact outcomes. The results of the Chi square analysis are included in Chapter IV. Analysis of beginning of the year pre-kindergarten CIRCLE scores determined there was baseline equivalency on acquired skills between the two groups upon entering pre-kindergarten. There were no significant differences in literacy skills between the two comparison groups of entering pre-kindergarten students. The subsidiary questions are as follows:

1. To what extent does participation in a linguistic phonics program in pre-kindergarten predict reading performance in kindergarten measured by DIBELS K?

2. To what extent does participation in a linguistic phonics program in pre-kindergarten predict reading performance in Grade 3 measured by DIBELS Grade 3.

3. To what extent does participation in a linguistic phonics program in pre-kindergarten predict reading performance in Grade 3 measured by NYSTP ELA in Grade 3.

The results of this study indicated that participation in the Magic Penny Reading Program did not predict performance on the DIBELS Grade K assessment or the New York State Test of Performance Grade 3. However, it did predict higher performance on the DIBELS assessment in Grade 3. The results also indicated that ethnicity does not play a factor in proficiency.

Chapter IV includes a description of the variables, characteristics of the sample, and results for each of the assessments – DIBELS Grade K, DIBELS Grade 3, and New York State Test of Performance in English Language Arts Grade 3. Chapter IV concludes with a brief summary.

Description of Variables

Dependent Variables

The dependent variables in this study are three academic outcomes that measured academic literacy proficiency: DIBELS assessment in Grade K, DIBELS assessment in Grade 3, and the NYSTP in ELA in Grade 3. The dependent variables are listed in Table 5.

Independent Variables

The independent variables are the type of phonics instructional program received in pre-kindergarten (the linguistic phonics program Magic Penny or the basal phonics program Houghton-Mifflin) and student characteristics (gender, economic status, ELL status, Black, White, Hispanic, and Multi-race). The independent variables are listed in Table 5.

Table 5

Table of Variables

Variables		Status
Assessments	DIBELS K	Dependent
	DIBELS 3	Dependent
	NYSTP ELA 3	Dependent
Type of Pre-kindergarten program	Linguistic Phonics: Magic Penny (intervention)	Independent
	Basal: Houghton-Mifflin (control)	Independent
Student Characteristics	Gender	Independent
	Economic Status	Independent
	ELL Status	Independent
	Black	Independent
	White	Independent
	Hispanic	Independent
	Multi-race	Independent

Note: NYSTP ELA is abbreviation for New York State Test of Performance in English Language Arts. AIS is abbreviation for Academic Intervention Services.

There was a total sample of 594 students. There were 297 students in the sample that received the linguistic phonics program (Magic Penny) in pre-kindergarten. There were 297 randomly selected students that received the basal phonics program (Houghton Mifflin) in pre-kindergarten. Preliminary chi square analysis was conducted to determine if the groups were comparable on basic demographic variables. Table 7 provides the subgroup characteristics. The two groups were equivalent on the following characteristics: gender, Black, Multi-Racial, CIRCLE pre-kindergarten assessment proficiency levels, and attrition rate. There are four characteristics where the groups had significant baseline differences: economically disadvantaged, White, Hispanic, and ELL.

The variable of economically disadvantaged had a chi square significance, *p* value of .031. There were more students identified as economically disadvantaged in the Magic Penny intervention group than in the control group (81.1% of the Magic Penny intervention group were

identified as economically disadvantaged, while 73.3% of the Houghton Mifflin control comparison group were identified as economically disadvantaged).

The variable of White had a chi square significance, *p* value of .000. There were more students identified as White in the Magic Penny (MP) intervention group than in the control group (34.3% of the MP intervention group were identified as White, while 17.8% of the Houghton Mifflin control comparison group were identified as White).

The variable of Hispanic had a chi square significance, *p* value of .012. There were fewer students identified as Hispanic in the Magic Penny intervention group than in the control group (11.4% of the Magic Penny intervention group were identified as Hispanic, while 18.9% of the Houghton Mifflin control comparison group were identified as Hispanic).

The variable of ELL had a chi square significance, *p* value of .000. There were fewer students identified as ELL in the Magic Penny intervention group than in the control group (2.0% of the Magic Penny intervention group were identified as ELL, while 9.4% of the Houghton Mifflin control comparison group were identified as ELL).

The results of the study may have been influenced by differences in the characteristics of Economically Disadvantaged, White, Hispanic, and ELL and not necessarily by the intervention of Magic Penny itself. See Table 7 for baseline equivalency results.

The percentages of female students were 53% and 58% in the control and intervention groups respectively. The percentages of male students were 47% and 42% in the control and intervention groups, respectively. The percentages of economically disadvantaged students were 74% and 81% in the control and intervention groups, respectively. The percentages of non-economically disadvantaged students were 26% and 19% in the control and intervention groups, respectively. The percentages of Black students were 49% and 42% in the control and

intervention groups, respectively. The percentages of non-Black students were 51% and 58% in the control and intervention groups, respectively. The percentages of White students were 18% and 34% in the control and intervention groups, respectively. The percentages of non-White students were 82% and 66% in the control and intervention groups, respectively. The percentages of Multi Race students were 6% and 8% in the control and intervention groups, respectively. The percentages of non-Multi Race students were 94% and 92% in the control and intervention groups, respectively. The percentages of Hispanic students were 19% and 11% in the control and intervention groups, respectively. The percentages of non-Hispanic students were 81% and 89% in the control and intervention groups, respectively. The percentages of ELL students were 9% and 2% in the control and intervention groups, respectively. The percentages of non-ELL students were 91% and 98% in the control and intervention groups, respectively.

Table 6

Baseline Equivalency

Variable/Characteristics	*p* Value	Percent of Student Population	
		Magic Penny Intervention Group	Control Group
Gender	.186	58.2%	52.9%
Economically Disadvantaged	.031	81%	73.7%
Black	.100	42.4%	49.2%
White	.000	34.3%	17.8%
Hispanic	.012	11.4%	18.9%
Multi-Racial	.347	8.4%	6.4%
CIRCLE Pre-K Proficiency	.325	89.9%	87.3%
ELL	.000	2.0%	9.4%
Attrition Rate	.201	2.4%	5.4%

Note. Chi square statistical analysis was used, with a significance level of <.05

The overarching question of this study asks if the type of literacy instruction in pre-kindergarten (Magic Penny vs. Houghton Mifflin) predicts academic academics outcomes (on short and long terms) in kindergarten and Grade three, and to what extent the relationships are moderated by demographic variables (gender, economic status, English language learner status,

and ethnicity). Three binary logistic test models were applied using SPSS to answer this overarching question, one to test the short-term outcome and two to test the long-term outcome and sustainability.

The outcome variables for DIBELS in kindergarten and Grade 3 are categorized as significantly below benchmark, below benchmark, or at or above benchmark. The term "benchmark" is synonymous with the term "proficient." The outcome variable in this study was dichotomized as either proficient (at or above benchmark), or non-proficient (significantly below benchmark or below benchmark).

Results

Grade K DIBELS Results

Research Subsidiary Question 1 asked: To what extent does participation in a linguistic phonics program in pre-kindergarten (Magic Penny) predict reading performance in kindergarten? This first question addressed the short-term effects by testing the relationship between type of instructional program in pre-kindergarten and student characteristics against the academic output of DIBELS grade K proficiency. A binary logistic regression was employed to estimate the extent to which the DIBELS kindergarten performance was impacted when controlled for the covariates of gender economic status, ELL status, and ethnicity.

The model was not statistically significant according to the Omnibus Test of Model Coefficients: $\chi^2(df = 8, N=514) = 14.606, p = .067$). The model explained between 2.8% (Cox and Snell *R* square) to 4.1% (Nagelkerke *R* square) of the variance in the proficiency in DIBELS Grade K. There was no improvement in the ability to predict if a student was proficient given the student characteristics and intervention. The model without the variables correctly classified 73.7%, but the model with the variables correctly classified 73.3%.

In the binary logistic regression for predicting proficiency in DIBELS, all variables were not statistically significant in predicting kindergarten academic performance. Table 8 indicates that with respect to the type of pre-kindergarten instruction program, the odds ratio was not significant (p = .095). The results for the demographic variables were also not significant (all had p > .05). The null hypothesis is not rejected for $H1_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in kindergarten DIBELS proficiency.

Table 7

Variables in the Equation: DIBELS Grade K

								95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	intervention(1)	0.352	0.211	2.791	1	0.095	1.422	0.941	2.150
	gender(1)	0.394	0.204	3.724	1	0.054	1.484	0.994	2.214
	econdis(1)	-0.320	0.288	1.236	1	0.266	0.726	0.413	1.276
	Black(1)	-0.739	0.561	1.738	1	0.187	0.478	0.159	1.433
	White(1)	-0.432	0.580	0.553	1	0.457	0.649	0.208	2.025
	Hispanic(1)	-0.605	0.588	1.060	1	0.303	0.546	0.172	1.728
	Multiracial(1)	-0.102	0.689	0.022	1	0.882	0.903	0.234	3.482
	lep(1)	-0.533	0.504	1.120	1	0.290	0.587	0.218	1.575
	Constant	1.497	0.608	6.061	1	0.014	4.470		

a. Variable(s) entered on Step 1: intervention, gender, econdis, Black, White, Hispanic, Multiracial, lep.

Grade 3 DIBELS Results

Research Subsidiary Question 2 asked: To what extent does participation in a linguistic phonics program in pre-kindergarten (Magic Penny) predict reading performance in Grade 3? The second question addressed the long-term or sustainability academic outcome by testing the relationship between type of instructional program in pre-kindergarten and student characteristics

against the academic output of DIBELS grade 3 proficiency. A binary logistic regression was employed to estimate the extent to which the DIBELS Grade 3 performance was impacted when controlled for the covariates of gender, economic status, ELL status, and ethnicity.

The model was statistically significant according to the Omnibus Test of Model Coefficients: $\chi^2(df = 8, N=310) = 18.395, p = .018$). The model explained between 5.8% (Cox and Snell *R* square) to 7.7% (Nagelkerke *R* square) of the variance in the proficiency in DIBELS grade 3. There was 7.6 percentage point improvement in the ability to predict if a student was proficient given the student characteristics and intervention. The model without the variables correctly classified 52.6%, and the model with the variables correctly classified 60.0%.

Using a binary logistic regression for predicting proficiency in DIBELS, several of the variables were demonstrated to be statistically significant in predicting Grade 3 academic performance. Table 9 shows that with respect to the type of pre-kindergarten instruction program, the odds ratio was significant (B = 0.610, *SE*(B) 0.245, $p = .013$, 95% *CI* for Exp(B) = 1.137 to 2.976) and positively correlated Magic Penny pre-kindergarten instruction with proficiency in Grade 3; the odds of a student scoring proficient in DIBELS Grade 3, who received Magic Penny instruction, was 1.8 times higher than for a student who received Houghton-Mifflin pre-kindergarten instruction. Interestingly, it was also statistically significantly demonstrated that for all the ethnicities studied, race (Black, White, Hispanic, and Multiracial), was negatively correlated with achieving proficiency in DIBELS Grade 3. The results for the demographic variable of Black was significant (B = -2.294, *SE*(B) = 0.826, $p = .005$, 95% *CI* for Exp(B) = 0.020 to 0.509) and showed that they were approximately ten times more likely to score not proficient in Grade 3. The results for the demographic variable of White was significant (B = -2.120, *SE*(B) = 0.846, $p = .012$, 95% *CI* for Exp(B) = 0.023 to 0.630) and showed that they were

approximately eight times more likely to score not proficient in Grade 3. The results for the demographic variable of Hispanic was significant (B = -2.121, *SE*(B) = 0.835, *p* =.011, 95% *CI* for Exp(B) = 0.023 to 0.616) and showed that they were approximately eight times more likely to score not proficient in grade three. The results for the demographic variable of Multiracial was significant (B = -2.805, *SE*(B) = 0.917, *p* =.002, 95% *CI* for Exp(B) = 0.010 to 0.365) and showed that they were approximately seventeenth times more likely to score not proficient in grade three. This suggests that not only is ethnicity not a statistically significant factor, but also that some factor or variable not considered in this analysis must play a role. The null hypothesis is rejected for $H2_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton-Mifflin) does not predict differences in Grade 3 DIBELS proficiency.

Table 8

Variables in the Equation: DIBELS Grade 3

								95% C.I. for EXP(B)	
		B	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
Step 1[a]	intervention(1)	0.610	0.245	6.171	1	0.013	1.840	1.137	2.976
	gender(1)	-0.042	0.240	0.031	1	0.860	0.959	0.599	1.535
	econdis(1)	-0.108	0.338	0.101	1	0.750	0.898	0.463	1.743
	Black(1)	-2.294	0.826	7.714	1	0.005	0.101	0.020	0.509
	White(1)	-2.120	0.846	6.280	1	0.012	0.120	0.023	0.630
	Hispanic(1)	-2.121	0.835	6.449	1	0.011	0.120	0.023	0.616
	Multiracial(1)	-2.805	0.917	9.369	1	0.002	0.060	0.010	0.365
	lep(1)	-0.751	0.624	1.449	1	0.229	0.472	0.139	1.603
	Constant	2.114	0.875	5.835	1	0.016	8.278		

a. Variable(s) entered on Step 1: intervention, gender, econdis, Black, White, Hispanic, Multiracial, lep.

Grade 3 NYSTP ELA Results

Research Subsidiary Question 3 asked: To what extent does participation in a linguistic phonics program in pre-kindergarten (Magic Penny) predict reading performance in Grade 3? This question addressed the long-term sustainability effects by testing the relationship between type of instructional program in pre-kindergarten and student characteristics against the academic output of the NYSTP in ELA proficiency. A binary logistic regression was employed to estimate the extent to which the NYSTP ELA performance was impacted when controlled for the covariates of gender, economic status, ELL status, and ethnicity.

The model was not statistically significant according to the Omnibus Test of Model Coefficients: $\chi^2(df = 8, N=250) = 19.800, p = .011$). The model explained between 7.6% (Cox and Snell *R* square) to 11.2% (Nagelkerke *R* square) of the variance in the proficiency in DIBELS Grade K. There was no improvement in the ability to predict if a student was proficient given the student characteristics and intervention. The model without the variables correctly classified 74.4 %, but the model with the variables correctly classified 75.2%.

In the binary logistic regression for predicting proficiency in NYSTP ELA Grade 3, all of the variables were not statistically significant in predicting proficiency. Table 10 indicates that with respect to the type of pre-kindergarten instruction program, the odds ratio was not significant ($p = .174$). The results for the demographic variables were also not significant (all had $p > .05$). The null hypothesis is not rejected for H3o: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in NYSTP Grade 3 ELA proficiency.

Table 9

Variables in the Equation: NYSTP ELA Grade 3

								95% C.I. for EXP(B)	
		B	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
Step 1[a]	intervention(1)	0.427	0.314	1.845	1	0.174	1.532	0.828	2.835
	gender(1)	0.460	0.312	2.175	1	0.140	1.584	0.860	2.918
	econdis(1)	-0.368	0.389	0.896	1	0.344	0.692	0.323	1.483
	Black(1)	-1.598	0.828	3.727	1	0.054	0.202	0.040	1.025
	White(1)	-0.522	0.850	0.376	1	0.540	0.594	0.112	3.143
	Hispanic(1)	-0.889	0.847	1.102	1	0.294	0.411	0.078	2.162
	Multiracial(1)	-1.269	0.989	1.645	1	0.200	0.281	0.040	1.954
	lep(1)	-1.475	0.924	2.547	1	0.111	0.229	0.037	1.400
	Constant	-0.052	0.880	0.004	1	0.953	0.949		

a.Variable(s) entered on Step 1: intervention, gender, econdis, Black, White, Hispanic, Multiracial, lep.

Summary

This chapter provided an interpretation of the results of the statistical analysis to determine whether the hypotheses were supported. Preliminary chi square analysis was performed for comparison of groups to determine baseline equivalency prior to performing the binary logistical regression models. The null hypothesis is not rejected for $H1_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in kindergarten DIBELS proficiency. The null hypothesis is rejected for $H2_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in grade 3 DIBELS proficiency. The null hypothesis is not rejected for $H3_0$: Type of pre-kindergarten literacy instruction (Magic Penny vs. Houghton Mifflin) does not predict differences in NYSTP Grade 3 ELA proficiency. Participation in a linguistic phonics program (Magic Penny) in pre-kindergarten did not predict performance on DIBELS in kindergarten or in Grade 3 NYSTP, nor did the demographic variables. However, proficiency in DIBELS Grade 3

increased for students who received pre-kindergarten linguistic phonics instruction (Magic Penny), and all ethnicities had a negative correlation with proficiency on DIBELS Grade 3, indicating that ethnicity does not play a factor in proficiency. The sample for this study was homogenous in the characteristic of economically disadvantaged—the majority of students in the sample in both the control and intervention groups were economically disadvantaged. Chapter V provides a summary, discussion, and recommendations.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this comparative quantitative study is to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children.

This concluding chapter provides an overall summary of the study and its findings and a discussion of its results in relation to prior research. Implications of the study, as a result of the findings from the statistical evidence, are also presented in this chapter. Limiting factors are discussed in order to strengthen future studies regarding this topic. The chapter concludes with recommendations for further studies.

Summary of the Findings

The overarching research question undertaken was to determine whether the type of literacy instruction in pre-kindergarten impacts short and long-term academic outcomes and to what extent the effects (if any) are attributable to, or moderated by, demographic variables. Specifically, this comparative quantitative study examined the short- and long-term relationship of two pre-kindergarten phonics programs: Magic Penny, a linguistic phonics program, vs. Houghton Mifflin, a balanced reading basal program, on academic literacy outcomes in kindergarten (short-term) and in Grade 3 (long-term). The academic outcomes in this study were determined by evaluation of students' performance on the DIBELS assessment in kindergarten and in Grade 3, and the NYSTP in ELA in Grade 3. The demographic variables examined were the students' gender, ELL, race/ethnicity, and economic status (the majority of students in this

study were identified as economically disadvantaged. The extent to which participation in the Magic Penny linguistic phonics program in pre-kindergarten predicts reading performance in kindergarten (measured by DIBELS Grade K) was specifically addressed as the first sub-question; the extent to which participation in the Magic penny linguistic phonics program in pre-kindergarten predicts reading performance in Grade 3 (measured by DIBELS Grade 3) was specifically addressed as the second sub-question, and the extent to which participation in the Magic Penny linguistic phonics program in pre-kindergarten predicts reading performance in Grade 3 (measured by NYSTP ELA Grade 3) was specifically addressed as the third sub-question. As discussed below, though the findings of the three subsidiary research questions were inconsistent, certain conclusions can still be drawn from each of them. These findings, potential reasons for these inconsistencies, and implications, and suggestions for future research are discussed.

The first research question examined the extent participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predicted reading performance in the short-term (kindergarten) as compared to the standard basal phonics program (Houghton Mifflin). It was measured using DIBELS Grade K. Binomial logistical analysis indicated that there was no significant difference in reading performance in Grade 3 as measured by the New York State Test of Performance (NYSTP), nor was there improvement in the ability to predict if a student was proficient, given the defined student characteristics and the intervention of Magic Penny. The type of literacy instruction (Magic Penny vs. Houghton Mifflin) in pre-kindergarten did not predict differences in DIBELS grade K proficiency.

The second research question examined the extent participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predicted reading performance in the long-term

(Grade 3) as compared to the standard basal phonics program (Houghton Mifflin). It was measured using DIBELS Grade 3. Binomial logistical regression analysis indicated that there was significant difference in reading performance in kindergarten between the two programs. Tests of the statistical assumption of logistical regression showed that none of the assumptions were violated; therefore, there is little chance that the significance was distorted, i.e., the findings in this study are real.

Students who received the Magic Penny intervention were almost two times more likely to score proficient on the Grade 3 DIBELS assessment than the students instructed with Houghton Mifflin in pre-kindergarten. It is notable that students' ethnicity (Black, White, Hispanic, and Multiracial), when evaluated as an independent variable, was not a significant factor in predicting the achievement of proficiency as measured by the DIBELS grade 3 assessment. However, when evaluating students participating in the Magic Penny pre-kindergarten program as a whole, participation in the program did demonstrate beneficial effects on performance on DIBELS Grade 3. That is, when broken down by ethnicity, every ethnicity group evaluated had a negative correlation: Not only was race not a factor in determining performance, but data suggest it appears to be negatively correlated to each individual racial group. If "ethnicity," evaluated as an individual factor potentially affecting performance, indicates that each ethnic group performs poorly, yet the intervention, on the whole, demonstrates benefit, then clearly there are factors other than race that are more important and that override ethnicity. Therefore, assuming the data are correct, there was some overriding benefit of using Magic Penny vs. Houghton Mifflin that overcame the apparent negative impact of race. This is an important finding because it refutes previous research (Denton et al., 2003) suggesting ethnicity as being the (or a major) correlating factor in literacy achievement. This

research suggests that there must be some other factor(s) more important than race that, in fact, can overcome a negative effect of race on students' performance on these assessments that are mitigated by the use of an instructional (linguistic) phonics program such as Magic Penny.

What cannot be answered from this study is what those factor(s) are, whether they are the same for each ethnicity group, and whether the positive effect of the Magic Penny program on Grade 3 performance was of the same magnitude for each racial class. Whatever those factors are (whether socioeconomic class-related, parental support-related, or parenting skills-related, or other home-life factors-related), when viewed globally, the Magic Penny program overcame any negative effect of classification of students by "race/ethnicity," irrespective of what the negative effect of "race" or "ethnicity" was actually due to. The type of literacy instruction, specifically, the use of Magic Penny, a linguistic phonics program, when compared to Houghton Mifflin, a balanced reading basal program, in pre-kindergarten did predict significant positive differences in DIBELS Grade 3 proficiency.

The third research question examined is: To what extent participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predicted reading performance in the long-term (Grade 3) as compared to the standard basal phonics program (Houghton Mifflin). Performance was measured using the New York State Test of Performance in English Language Arts grade 3. Binomial logistical analysis indicated that there was no significant difference in reading performance in kindergarten between the two programs, nor was there improvement in the ability to predict if a student was proficient given the defined student characteristics and the intervention of Magic Penny. The type of literacy instruction (Magic Penny vs. Houghton Mifflin) in pre-kindergarten did not predict differences in the New York State Test of Performance in English Language Arts Grade 3 proficiency.

These results for the three research questions do appear inconsistent. According to previous research on systematic phonics programs vs. basal phonics programs, systematic phonics programs showed increased short-term gains (Johnston & Watson, 1997, 2005; McGeown & Medford, 2014; Casey, Cook-Cottone, & Baker, 2012; Gray et al., 2007; Jones et al., 2015; Borman et al., 2008). However, the results of Subsidiary Questions 1 and 3 do not correlate with the research, as Subsidiary Question 2 does. The Clackmannanshire study (Johnson & Watson, 1997, 2005) was a seven-year comparative study of analytic phonics vs. a synthetic phonics program (Jolly Phonics). In particular, the fact that students instructed with the systematic program Jolly Phonics showed remarkable sustained achievement with *all* students—including ELL and students identified with special needs—it correlates with the findings of Subsidiary Question 2. (Morgan & Willows, 1996; Stornelli & Willows, 1998; Torgerson et al., 2006). Kwan & Willows, 1998).

It is important to distinguish between the two types of assessments used in this study. DIBELS measures foundational reading skills and is considered a screening and formative assessment tool that measures isolated reading skills. The New York State Test of Performance is a summative assessment that measures comprehension of whole reading passages, not the foundational skills necessary for deciphering the text.

Although the findings are not significant at first with DIBELS Grade K, the significant findings of DIBELS Grade 3 and the discrepancy between the DIBELS Grade 3 and NYSTP in ELA Grade 3 results cannot be ignored. The effects of Magic Penny were demonstrable at the third-grade level for foundational skills, but they did not translate to the complex whole passage comprehension reading on the New York State Test of Performance (NYSTP). As a beneficial effect was demonstrable, this suggests that the NYSTP may not be a sensitive enough test to

detect the improvement gained by employing this (Magic Penny- linguistic phonics) instructional program, perhaps due to its emphasis on "whole passage" comprehension, or that the improvement in foundational skills was not of sufficient magnitude, or to the degree of fluency and automaticity to affect performance on a test of whole passage comprehension, or that the improvements measured and demonstrated by the DIBELS Grade 3 assessment are not relevant to whole passage comprehension. Alternatively, one could suggest a delayed effect of exposure to Magic Penny on whole-passage comprehension, such as one in which the program imparts a longer-term benefit that does not become statistically demonstrable by the NYSTP in ELA Grade 3, but later. One would expect that that students who demonstrate an improvement in foundational skills would demonstrate an improvement in whole passage comprehension, unless the improvement was insufficient to translate to an improvement in comprehension, was not related to comprehension, or the test being used was not sensitive enough to detect the improvement.

Discussion

Evidence suggests that children who have access to quality pre-kindergarten experiences are better prepared for school, are more likely to be proficient in reading and perform on grade level in literacy and other academic contents, graduate high school, and continue to college (Jung, Barnett, Hustedt, & Francis, 2013). Numerous longitudinal studies (McCardle & Chhabra, 2004; Kutner et al., 2007; Lyon, 1999-2013; Hearing on Measuring Success, 2001) and numerous gathered statistics (The Brookings Institution, 2007; Butler, Beach, & Winfree, 2008; Pew Charitable Trust, 1996-2016; National Center for Educational Statistics, 2002, 2017) provide evidence of the long-lasting deleterious social, emotional, academic, and societal effects

of children who do not learn how to read proficiently. Clearly, it is critical that additional careful research is conducted in the area of early literacy.

It is evident in the research that phonics and phonemic awareness is a foundational skill necessary for learning to read and for future reading success (Hatcher, Hulme, & Snowling, 2004; Isakson, Marchand-Martella, & Martella, 2011) and that direct explicit instruction of phonics and phonemic awareness results in increased literacy skills (Ziolowski & Goldstein, 2008; Bailet et al., 2011; Duff, Hayiou-Thomas, & Hulme, 2012; Duff et al., 2015; Qi & Connor, 2000; Maslanka & Joseph, 2002; Justice et al., 2003). Evidence also suggests that at-risk children can be identified as early as preschool (Duff, 2015) and that children should be taught phonics and phonological skills as early as possible—as early as pre-school and pre-kindergarten (Yeh & Connell, 2008; Duff, et al., 2015; McArthur et al., 2012). However, not all core phonics programs are created equal (Jewel, 2005). While there have been many singular and comparative studies on effective phonics *intervention* programs for struggling students (Ziolowski & Goldstein, 2008; Bailet et al., 2011; Duff, Hayiou-Thomas, & Hume, 2012; Duff et al., 2015; Qi & Connor, 2000; Maslanka & Joseph, 2002; Justice et al., 2003), there are few studies on *core* reading programs with structured phonics built in, especially comparative core phonics program studies in the United States. Therefore, the question remains, which core phonics program can predict greater literacy achievement in the short- and long-term?

The purpose of this study was to examine the short- and long-term relationship of two pre-kindergarten *core* phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results may predict which program yields higher literacy academic outcomes and for which subgroups of children. This study was directed by the following overarching research questions and subsidiary questions:

Overarching Research Question

Does the type of literacy instruction in Pre-K (Magic Penny vs. Houghton Mifflin) predict academic outcomes in kindergarten and Grade 3, and to what extent are relationships moderated by demographic variables (gender, economic status, ELL, and race/ethnicity)? The academic outcomes in this study were measured by the following:

- DIBELS assessment - kindergarten
- DIBELS assessment - Grade 3
- NYSTP in ELA - Grade 3

Subsidiary Research Questions

1. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in kindergarten (measured by DIBELS Grade K)?
2. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by DIBELS Grade 3)?
3. To what extent does participation in a linguistic phonics program (Magic Penny) in pre-kindergarten predict reading performance in Grade 3 (measured by NYSTP ELA Grade 3?

Preliminary data analysis at each level of the study included chi square analysis to ensure the groups were comparable on entering pre-kindergarten skill sets (measured by CIRCLE assessment) and basic demographic variables. There were no differences between the two groups on the CIRCLE assessment. There were differences in the subgroups of economically disadvantaged, White, Hispanic, and ELL. There were more students identified as economically

disadvantaged and White in the Magic Penny intervention group as compared to the Houghton Mifflin control group. There were fewer students identified as Hispanic and ELL in the Magic Penny intervention group as compared to the Houghton Mifflin control group. The results of the study may be influenced by differences if the characteristics of economically disadvantaged, White, Hispanic, and ELL, and not necessarily by the intervention itself. Binary logistical regression analysis was conducted to answer questions related to predicting short-term and long-term group performance and to what extent they may be moderated by demographic variables.

There was a total sample of 594 students—297 selected students for the Magic Penny intervention group and 297 randomly selected Houghton Mifflin control group. While there was attrition, there were enough participants in each group for Grade K and Grade 3 statistical analysis.

Implications

Providing children with quality pre-kindergarten phonics core reading program instruction can positively increase academic success and life outcomes (Heckman, 2017), as well as possibly decrease the number or students who need academic intervention services. With the current reading programs in the United States, most of them being basal programs, approximately 40% of all students need academic intervention services. Providing systematic phonics instruction embedded *within* a core program may prove to be more cost effective because it may decrease the number of students who need academic intervention services. Providing systematic phonics instruction embedded *within* core programs that target systematic instruction of foundational skills, such as systematic phonics instruction and that have research-based evidence of closing the gap between subgroups of children, could help combat the

educational disparity that currently exists among children (Center on the Developing Child at Harvard University, 2016; Torgerson, 2006).

Results of this study confirm that exposure to the systematic linguistic phonics program Magic Penny had higher literacy achievement than the standard basal phonics program. Additionally, it appears to ameliorate performance disparities previously associated with ethnicity. The selection of an appropriate systematic phonics program is of utmost importance in building early literacy skills, closing the achievement gap between subgroups, and could be more cost effective. This study added to the limited current research on comparative studies in systematic core phonics reading programs.

Limitations

Since this study was a non-experimental, quantitative causal-comparative study, it may be concluded that it has weak internal validity. According to Warner (2013), "A nonexperimental study usually has weak internal validity." Thus, results from this binomial logistical regression of extant data must be interpreted carefully, as rival explanations could explain the variability in the results. Additionally, participation in the intervention Magic Penny group was not randomized and the probability of receiving either pre-kindergarten program may not have been equal for each student. Additional rival variables for this study could include the following: variation in teacher experience, quality of professional development, behavior management skills, philosophical beliefs pertaining to the instruction of reading, fidelity to the reading programs, type of academic intervention services that may have been received in subsequent years, quality of instruction post pre-kindergarten, IQ levels of students, and differing levels of parental support.

Though the overall sample size comprised 595 pre-kindergarten students (the majority of

which were economically disadvantaged) and sample sizes for the subgroups were adequate for statistical analysis, larger sample sizes might have yielded more reliable results and increased its generalizability. An additional limitation to the study and its potential generalizability to larger populations is that this study was conducted in a single school district in New York State.

An additional factor to consider which could have impacted the results of the study is the type and amount of academic intervention services available to the students. It was discovered by the investigator that the literacy and academic intervention support staff received professional development in the theoretical basis upon which the Magic Penny program was created. The professional development series is called LETRS (Voyager Sopris Learning, 2020) and was developed by Louisa Moates. It scaffolds educators' understanding of the science of how the written English language was developed and the structure of the language, which is built upon phonemes. Participants learn the code of the language, each phoneme, and best research methods of instructing, regardless of the series the teachers are using. LETRS is not a reading program, nor does it substitute for a reading program, but rather it is a professional development series that prepares teachers to complement and support *any* well-designed reading program. The knowledge of the science of reading and the construct of the language and the research-based practices can be adapted to any text. It is very likely that students who did not receive the Magic Penny intervention program and needed academic intervention services may have received support instruction using the same theoretic base upon which Magic Penny was created. This may have impacted the results of the DIBELS assessment in Grades K and 3, as well as the results in the New York State Test of Performance Grade 3. Nevertheless, significant gains were demonstrated in Grade 3 with students instructed with Magic Penny in Grade 3.

Another limitation of this study is that the extant data available from the district were

categorical, thus warranting binomial logistical regression. The categories for DIBELS were "significantly below benchmark," "below benchmark," and "at or above benchmark." Categorical data may not lend itself to granular differences (in this study, students were categorized as either "proficient" or "not proficient"). For example, a student scoring at the highest end of "below proficiency' on DIBELS is quite different from a student who barely made the cutoff for "below proficiency." Perhaps if numerical scores were available from the district, these granular differences may have been picked up by a different statistical analysis method that compares numerical scores. While extant data from the district did include numerical scores for the New York State Test of Performance, the cut scores changed throughout the years, thus again warranting binomial logistical regression as well.

Study Significance

Contribution to Research

This study contributes to the existing body of early reading literacy and knowledge of phonics teaching approaches in several ways:

- it compares two core programs, linguistic-phonics and a basal program, to determine differences in early literacy skills instruction and skill acquisition.
- it may provide information to predict which early reading program is optimal for increasing literacy achievement and long-term efficacy, and with which student populations.
- it provides information that could help ameliorate subgroup disparity.

Contribution to Theory

This study contributes to the existing theory on the teaching of early reading because of the following:

- It examines existing body of knowledge through a structural theory lens—theory that is closely aligned with the fact that written language is an invention and the central logic behind its structure is not subject to change, regardless of its purpose or meaning to individuals
- It provides information to spur a possible paradigm shift in how early reading instruction should be taught: directive, explicit, scaffolded phonics and phonemic instruction as opposed to discovery or developmental theoretic bases.

Contribution to Practice

This study contributes to the practice of teaching early reading because of the following:

- It informs the pedagogy for more effective approaches in the teaching of early reading—moving teachers towards more effective approaches in the teaching of early reading.
- It provides information to support paradigm shifts in how early reading should be taught.
- It guides publishers to have more streamlined, structured, reading approaches and programs.
- It provides information to guide professional development.

Contribution to Leadership

This study may contribute to the existing body of early reading literacy knowledge to positively guide policy and practice of how phonics should be taught, thus informing teacher education at the college level. Traditionally, college teacher preparation programs minimally train teachers in the instruction of reading. This research may contribute to guiding policy in teacher preparation programs, which in turn directs funding and eventually influences practice

to create a paradigm shift in the instruction of early literacy. This study may provide information for school districts to consider when selecting early reading instructional programs and professional development opportunities.

Recommendations for Policy

Based upon findings of this study and numerous empirical studies on early reading instruction, universities and colleges must enhance their educational programs to include courses on the teaching of reading. Teacher preparation programs should increase the number of rigorous reading instruction courses teachers must take for certification. Additionally, public school leadership programs should also include courses in the teaching of literacy. Given that we have a national problem of literacy acquisition, re-certification of teacher education programs for the colleges and universities should include new rigorous coursework in the area of literacy acquisition. If the nation is to compete in a global economy and with increasing 21st century literacy skills, this should be the policy across the nation.

Recommendations for Practice

The research indicates that direct explicit instruction in phoneme awareness and phonics improves student achievement. Practitioners in the teaching of reading should implement programs that have direct explicit instructions in phoneme awareness and phonics *built into* the *core* program. All children can benefit from direct explicit instruction in the teaching of reading, not just struggling or at-risk students. Professional development in research-based, direct explicit instruction in reading would inform teachers' pedagogy to include more effective approaches in the teaching of reading, thus improving student academic achievement.

Recommendations for Future Research

Based upon the findings of this study and the limitations discussed above, further research on core systematic phonics programs is recommended. Suggestions include the following:

1. This type of study can be replicated with an experimental research design utilizing a larger sample size. The ideal sample for this study would involve thousands of students from various ethnicities and subgroups across the nation, preferably with numerical rather than categorical data. In addition to the overall larger study design, "check-points" to ensure that teachers have received adequate professional development and are actually following the programs with fidelity should be instituted.
2. An argument for causation could be to include the limitations of using the assessments employed in this study (discussed above). Employ different literacy assessment instruments and types of assessments; e.g., a more comprehensive phoneme and phonological awareness assessment that measures more than just a few of the phonemes in the English language, such as the Phonological Awareness Screening Test (PAST test) or the Comprehensive Test of Phonological Processing, Second Edition (CTOPP-2) (Wagner et al., 2013, 1999).
3. A follow-up quantitative study to this study could be to examine the impact of the effect of the type of early literacy instruction on non-academic areas, such as attendance, behavior, and the amount and type of academic intervention services students require post pre-kindergarten.

4. Follow-up studies to this study could be to interview the pre-kindergarten teachers and obtain feedback on the self-reported quality of their professional development experiences, their philosophical beliefs, fidelity to the programs, and the impact of LETRS training on their instructional practices. Quantitative studies in the form of surveys as well as qualitative studies in the form of interviews could provide additional information about the context from which the data were derived.
5. Comparative studies on teachers receiving professional development in the structure of the English language and how it was developed and coded and the theoretical base of systematic phonics instruction versus teachers' utilization of programs developed by this theoretical base could identify which approach is more effective in increasing student literacy achievement. For example, a comparative study on the results from teachers who received LETRS professional development training versus teachers utilizing a systematic phonics program would be informative.
6. Given the dire need for literacy improvement in this country, the massive amount of monies put forth for academic interventions, and the fact that not all phonics program are created equal, there should be another National Reading Panel created to determine which systematic phonics reading approach is most effective.
7. The data for this research study demonstrate moderate positive predictability between pre-kindergarten systematic phonics instruction programs and improved literacy achievement of Grade 3 students. An empirical longitudinal study utilizing an experimental research design could serve to further document which type of systematic phonics instruction program proves to be most effective and to have sustainable results.

Conclusion

This causal-comparative quantitative study was designed to examine the short- and long-term relationship of two pre-kindergarten phonics programs (Magic Penny vs. Houghton Mifflin) on academic literacy outcomes. The results predicted which program yielded higher literacy academic outcomes and for which subgroups of children. The findings of this study document that exposure to the linguistic phonics program Magic Penny resulted in increased literacy achievement in Grade 3 foundational literacy skills as measured by the formative assessment screening DIBELS assessment regardless of ethnicity. The fact that exposure to Magic Penny in pre-kindergarten mitigated factors attributed to race in Grade 3 is important to note, regardless of there not being significances in student outcome on the Grade K DIBELS assessment and the Grade 3 New York State Test of Performance. There may have been extenuating factors contributing to these outcomes. Further research is warranted to document and confirm the results of this study. However, the results are substantial enough to indicate the value of the Magic Penny phonics program in pre-kindergarten. This study supports previous research on systematic phonics program and those who advocate for systematic phonic core program instruction in pre-kindergarten. Ensuring early phonics skill development and knowledge supports future increased literacy achievement. Additionally, America can help close the achievement gap of subgroup disparity by selecting programs that have proven evidence of mitigating factors that are or may be related to ethnicity.

REFERENCES

Assiter, A. (1984). Althusser and structuralism. *British Journal of Sociology*, 272-296.

Australian Government Department of Education, Science, and Training (2005). Submission to the House of Representatives Standing Committee on Education and Vocational Training Inquiry into teacher training. Retrieved from http---www.aphref.aph.gov.au-house- committee-evt-teachereduc-subs-sub059.pdf

Bailet, L. L., Repper, K. K., Piasta, S. B., Murphy S. P., & Zettler-Greeley, C. (2011). Emergent literacy intervention for prekindergartners at risk for reading failure: Years 2 and 3 of a multiyear study. *Journal of Learning Disabilities 46*(2), 133-153.

Beishline, M. L. (2020). *Beginning reading: A comparative study of beginning reading phonics programs* [Doctoral dissertation, Seton Hall University].

Bell, T. H. (1983). A nation at risk: The imperative for educational reform. National Commission on excellence in Education.

Borman, G. D., Dowling, N. M. & Schneck, C. (2008). A multisite cluster randomized trial of open court reading. *Education Evaluation and Policy Analysis, 30*, 389-407.

Bradley, L., and Bryant, P. E. (1983). Categorizing sounds and learning to read- a causal connection. *Nature, 301*, 419-421.

Bradley, L., & Bryant, P. E. (1985). *Rhyme and reason in reading and spelling.* University of Michigan Press.

The Brookings Institution. (2007). American dream report. Retrieved from http://www.brookings.edu/research/papers/2007/05/useconomics-morton

Brooks, G. (2003). Sound sense: Thephonics element of the National Literacy Strategy: A report to the Department for Education and Skills (DIES).

Burkard, T. (1996). Phonological training in reception year. *British Journal of Curriculum and Assessment, 6*, 7-9.

Burkard, T. (1999). The end of illiteracy. *The Holy Grail of Clackmannanshire*. Centre for Policy Studies.

Butler, S., Beach, W., & Winfree, P. (2008). *Pathways to economic mobility: Key indicators.* The Economic Mobility Project.

Byrne, B. J. (1998). *The foundation of literacy: The child's acquisition of the alphabetic principle*. Psychology Press.

Byrne, B., & Fielding-Barnesley, R. (1989). Phonemic awareness and letter knowledge in the child's acquisition of the alphabetic principle. Journal of Educational Psychology, 81(3), 313-321. https://doi.org/10.1037/0022-0663.81.3.313

Byrne, B., & Fielding-Barnsley, R. (1993). Evaluation of a program to teach phonemic awareness to young children: A 2 and 3-year follow-up and a new preschool trial. *Journal of Educational Psychology, 87*, 488-503.

Camilli, G., Vargas, S., & Yurecko, M. (2003). Teaching children to read: The fragile link between science & federal education policy. *Education Policy Analysis Archives, 11*, 15.

Carrier, E. (2012). Economic mobility in the United States. Disrupting the poverty cycle: Emerging practices to achieve economic mobility and poverty traps. Conference Report, Women's Union.

Casey, C. M., Cook-Cottone, C., & Baker, C. N. (2012). A pilot study of effects of the

Magic Penny early literacy program on phonemic awareness and basic reading skills, *New School Psychology Bulletin, 9,* 74-84.

Center on the Developing Child at Harvard University (2016). *Developing child*. Retrieved from http://developingchild.harvard.edu

Chall, J., & Feldman S. (1966). First grade reading: An analysis of the interactions of professed methods, teacher implementation and child background. *The Reading Teacher, 19,* 569-575.

Chall, J. (1967). *Learning to read: The great debate.* McGraw-Hill

Chantarat, S., & Barrett, C. B. (2012). Social network capital, economic mobility and poverty traps. *J Econ Inequal, 10*, 299-342. https://doi.org/10.1007/s10888-011-9164-5

CIRCLE Group. (2004). mClass CIRCLE. The University Science Center at Houston.

Creswell, J. W. (2003). *Research design. Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Sage.

Curriculum standards and school funding: No Child Left Behind Act and teacher accountability. (n.d.) Retrieved November 7, 2016 from http://education.findlaw.com/curriculum-standards-school-funding/no-child- left-behind-act-and-teacher-accountability.html

Duff, F. J., Hayiou-Thomas, M. E., & Hulme, C. (2012). Evaluating the effectiveness of a phonologically based reading intervention for struggling readers with varying language profiles. *Reading & Writing, 25*, 621-640. 10.1007/s11145-010-9291-6

Duff, F. J., Mengoni, S. E., Bailey, A. M., & Snowling, M. J. (2015). Validity and sensitivity of the phonics screening check: Implications for practice. *Journal of*

Research in Reading, *38*(2), 109-123.

Edgar, D. W. (2012). Learning theories and historical events affecting instructional design in education: Recitation towards extraction literacy practices. *Sage Open*, *2*(4), 2158244012462707

Educators and the legal System. (n.d.). Retrieved from https://us.corwin.com/sites/default/files/upm-binaries/28880_Essex_ch1.pdf

Ehri, L. C., Nunes, S. R., Willows, D. M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading research quarterly*, *36*(3), 250-287.

Engage New York. (2013). Performance level descriptions for ELA and mathematics. https://www.engageny.org/resource/performance-level-descriptions-for-ela-and-mathematics

Engage New York. (n.d.). Common Core 3-8 ELA and mathematics tests. Retrieved from https://www.engageny.org/3-8

Every Student Succeeds Act of 2015. Pub. L. No. 114-95 §114 Stat. 1177 (2015-2016).

Find Law (2016). No Child Left Behind Act and teacher accountability. Retrieved from http://education.findlaw.com/curriculum-standards-school-funding/no- child-left-behind-act-and-teacher-accountability.html

Foorman, B. R. (1995). Research on "the great debate": Code-oriented versus whole language approaches to reading instruction. *School Psychology Review*.

Foorman, B. R., Francis, D. J., Beeler, T. Winikates, D., & Fletcher, J. M. (1997). Early interventions for children with reading problems: Study designs and preliminary

findings. *Learning Disabilities, 8*, 63-71.

Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century.* Macmillan.

Fry, E. (1968). A readability formula that saves time. *Journal of Reading, 11*(7), 513-578. Retrieved from http://www.jstor.org/stable/40013635

Gagne, R. (1985). *The conditions of learning and theory of instruction Robert Gagné.* New York, NY: Holt, Rinehart and Winston.

Gall, M.D., Gall, J.P., & Borg, W.R. (2007). *Educational research: An introduction.* Pearson.

Gardner, D. P., Larsen, Y. W., Baker, W., Campbell, A., & Crosby, E. A. (1983). *A nation at risk: The imperative for educational reform* United States Department of Education.

Good, R. H., & Kaminski, R. A. (2002). *DIBELS oral reading fluency passages for first through third grades* (No. 10, pp. 6-10). Technical report.

Good III, R. H., Powell-Smith, K. A., & Dewey, E. N. (2013). DIBELS pathways of progress: Setting ambitious, meaningful, and attainable goals in grade level material.

Goodman, K. S. (1986). *What's whole in whole language? A parent/teacher guide to children's learning*. Heinemann Educational Books.

Goodman, K. S. (1987). *Language and thinking in school: A whole-language curriculum*. Richard C. Owen Publishers.

Goodman, K. S. (1989). Whole-language research: Foundations and development. *The Elementary School Journal*, 207-221.

Gray, C., McCloy, S., Dunbar, C., Dunn, J., Mitchell, D., & Ferguson, J. (2007).

Added value or a familiar face? The impact of learning support assistants on young readers. *Journal of Early Childhood Research, 5*(3), 285-300.

Gray, C., Ferguson, J., Behan, S., Dunbar, C., Dunn, J., & Mitchell, D. (2007). Developing young readers through the linguistic phonics approach. *International Journal of Early Years Education, 15*(1), 15-33.

Hatcher, P. J., & Hulme, C. (1999). Phonemes, rhymes, and intelligence as predictors of children's responsiveness to remedial reading instruction: Evidence from a longitudinal intervention study. *Journal of experimental child psychology, 72*(2), 130-153.

Hatcher, P. J., Hulme, C., & Snowling, M. J. (2004). Explicit phoneme training combined with phonic reading instruction helps children at risk of reading failure. *Journal of Child Psychology and Psychiatry, 45*(2), 338-358.

Hearing on measuring success: Using assessments and accountability to raise student achievement before the House Committee on Education and the Workforce. Subcommittee on Education Reform. 107th Cong. (2001, March 8)(Testimony of G. H. Reid Lyon). Also available on line: http://edworkforce.house.gov/hearings/107th/edr/idea6602/lyon.htm.

The history of federal government in public education: Where have we been and how did we get here? (2011). Retrieved from http://lwv.org/content/history-federal-government-public-education-where-have-we-been-and-how-did-we-get-here

Houghton Mifflin Company. (2003). *Houghton Mifflin reading series* (Vol. 2). Houghton Mifflin.

Isakson, L., Marchand-Martella, N., & Martella, N. C. (2011). Assessing the effects of the

McGraw Hill phonemic awareness program with preschool children with developmental delays: A case study. *Education and Treatment of Children, 34*(3), 373-388.

Jeynes, W. H., & Littell, S. W. (2000). A meta-analysis of studies examining the effect of whole language instruction on the literacy of low-SES students. *The Elementary School Journal*, 21-33.

Johnston, R. S., & Watson, J. (1997). Developing reading, spelling and phonemic awareness skills in primary school children. *Reading, 31*(2), 38-41.

Johnston, R., & Watson, J. (2005). The effects of synthetic phonics teaching on reading and spelling attainment: A seven-year longitudinal study.

Jones, C. (2015). Milwaukee, WI: Socially responsible evaluation in education (SREED), University of Wisconsin-Milwaukee. Retrieved from https://pantherfile.uwm.edu/groups/uwm/SOE/docs/SREed/second-cohort- final-report.pdf Retrieved from: https://eric.ed.gov/?id=ED567484

Jones, C., & Lander, R. (2014). Evaluation of the Milwaukee Community Literacy Project/SPARK Program: Findings from the first cohort. University of Wisconsin, Milwaukee. Retrieved from http://www4.uwm.edu/

Jung, K., Barnett, W. S., Hustedt, J. T., & Francis, J. (1998, December). Longitudinal effects of the Arkansas Better Chance Program: Findings from first grade through fourth grade. Presented at the National Institute for Early Education Research, Rutgers University, New Brunswick, NJ.

Justice, L. M., Chow, S., Capellini, C., Flanigan, K., & Colton, S. (2003). Emergent literacy intervention for vulnerable preschoolers: Relative effects of two approaches. *American Journal of Speech-Language Pathology, 12*, 320-332.

Kastberg, D., Chan, J. Y., & Murray, G. (2016). Performance of U.S. 15-year-old students in science. Reading, and mathematics literacy in an international context: First look at PISA 2015. NCES 2017-048. National Center for Education Statistics.

Kelly, M. (2016). Overview of the industrial revolution. Retrieved from http://americanhistory.about.com/od/industrialrev/a/indrevoverview.htm

Kena, G., Hussar, W., McFarland, J., deBray, C., Musu-Gillette, L., Wang, X., Zhang, J., Rathbun, A., Wilkinson-Flicker, S., Diliberti, M., Barmer, A., Bullock Mann, F., & Dunlop Velez, E. (2016). The condition of education 2016. NCES 2016-144. National Center for Education Statistics.

Keogh, B. K., & Bernheimer, L. P. (1998). Issues and dilemmas in longitudinal research: A tale of two studies. *Thalamus, 16*, 5-13.

Klein, A., & Sparks, S. (2016). Investing in innovation: An introduction to i3. *Education Week.*

Korte, G. (2015). The Every Student Succeeds Act vs. No Child Left Behind: What's changed? www.usatoday.com/story/news/politics/2015/12/10/every-student-succeeds- act-vs-no-child-left-behind-whats-changed/77088780/

Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y. C., & Dunleavy, E. (2007). Literacy in everyday life: Results from the 2003 assessment of adult literacy. U.S. Department of Education, Institute of

Education Sciences. National Center for Education Statistics. http://nces. ed.

gov/pubsearch/pubsinfo. asp.

Kwan, A. B., & Willows, D. M. (1998). Impact of early phonics instruction on children learning English as a second language. Presented at *National Reading Conference, Austin, Texas.*

Lee, J., Grigg, W., & Donahue, P. (2007). The nation's report card. *Reading,* 496. .

Lindblom, K. (2011). Dynamic nature of the English language to promote the teaching of code-switching. *English Journal, 100*(4), 44-49.

Lloyd, S., & Wernham, S. (1992). *The phonics handbook: A handbook for teaching reading, writing, and spelling.* Jolly Learning Ltd.

Lloyd, S., & Wernham, S. (2009). *Jolly Phonics*. Jolly Learning.

Lyon, G. R. (1999). Education research: Is what we don't know hurting our children? *Statement to the House Science Committee Subcommittee on Basic Research, U.S. House of Representatives. Retrieved January, 9*, 2002.

Lyon, G. R. (1999-2013). Learning to read: A call from research to action. http://www.getreadytoread.org/early-learning-childhood-basics/early-literacy/learning-to-read-a-call-from-research-to-action.

Martin, M. O., Mullis, I. V., & Kennedy, A. M. (2007). *Progress in International Reading Literacy Study (PIRLS): PIRLS 2006 Technical Report*. TIMSS & PIRLS International Study Center, Boston College.

Martin, M. O., & Mullis, I. V. (2013). *TIMSS and PIRLS 2011: Relationships among reading, mathematics, and science Achievement at the fourth grade— Implications for early learning*. International Association for the Evaluation of Educational Achievement.

Maslanka, P., & Joseph, L. M. (2002). A comparison of two phonological awareness techniques between samples of preschool children. *Reading Psychology, 23*(4), 271-288.

McArthur, G., Eve, P. M., Jones, K., Banales, E., Kohnen, S., Anandakumar, T., ... & Castles, A. (2012). Phonics training for English-speaking poor readers. Cochrane Database of Systematic Reviews.

McCardle, P. E., & Chhabra, V. E. (2004). *The voice of evidence in reading research*. Paul H Brookes Publishing.

McCracken, G., Walcutt, C. C., Bond, M. F., & Faircloth, E. (1975). Basic reading F-Teacher's Edition.

McGuinness, D. (1997). Decoding strategies as predictors of reading skill. A follow-on study. *Annals of Dyslexia, 47*(1), 117-150.

McGuinness, D. (1998). *Allographs II: A linguistic spelling program: Multisyllabic word building*. SeaGate Press.

McGuinness, D. (1997). *Why children can't read, and what we can do about it: A scientific revolution in reading.* Penguin Books.

Mc Guinness, D. (2004). *Early reading instruction: What science really tells us about how to teach reading.* The MIT Press.

McGuinness, D. (2006). *Language development and learning to read.* MIT Press.

McGuinness, D., McGuiness, C., & Donahue, J. (1995). Phonological training and the alphabet principle: Evidence for reciprocal causality. *Reading Research Quarterly, 30*, 830-852.

McGuinness, D. L., & Van Harmelen, F. (2004). OWL web ontology language overview.

W3C recommendation, 10(10), 2004.

Macmillan, B. (1997). *Why schoolchildren can't read* (No. 2). Coronet Books Incorporated.

McGeown, S. P., & Medford, E. (2014). Using method of instruction to predict the skills supporting initial reading development: Insight from a synthetic phonics approach. https://doi.org/10.1007/s11145-013-9460-5

Moody, A. (2012). Educ 300: Education reform, past, and present. The Education for All Handicapped Children Act: A faltering step toward integration. http://commons.trincoll.edu/edreform/2012/05/the-education-for-all-handicapped-children-act-a-faltering-step-towards-integration/

Mullis, I. V., Martin, M. O., Kennedy, A. M., & Foy, P. (2007). PIRLS 2006 international report. *IEAhttp://pirls. bc. edu/isc/publications. html# p06, 30.6. 2008)*

National Assessment of Educational Progress (2016). Reading assessment. https://nces.ed.gov/nationsreportcard/reading/

National Center for Education Statistics. (2002). Adult literacy in America: A first look at the findings of the National Adult Literacy survey. https://nces.ed.gov/pubs93/93275.pdf

National Center for Education Statistics. (2003). Literacy behind bars results from the 2003 National Assessment of Adult Literacy prison survey. https://nces.ed.gov/pubs2007/2007473.pdf

National Center for Educational Statistics (2017). Early childhood longitudinal program. https://nces.ed.gov/ecls/Policy Brief - Early literacy: Policy and practice in the

preschool years. http://nieer- www1.rutgers.edu/publications/policy-matters-policy-briefs/policy-brief-early- literacy-policy-and-practice-preschool

National Reading Panel. (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading Nation's Report Card (2009). Grade 4 national results. https://www.nationsreportcard.gov/reading_2009/nat_g4.aspx

Nation's Report Card (2012). Summary of major findings. https://www.nationsreportcard.gov/ltt_2012/summary.aspx

Nation's Report Card (2012). Reading age 9. https://www.nationsreportcard.gov/ltt_2012/age9r.aspx#0-0

Nation's Report Card (2013). Are the nation's 12th graders making progress in mathematics and reading? http://www.nationsreportcard.gov/reading_math_g12_2013/#/

Nation's Report Card. (2013). Reading 2013 State Snapshot Report. https://nces.ed.gov/nationsreportcard/subject/publications/stt2013/pdf/2014464NY4.pdf

Nation's Report Card (2015). Mathematics and reading assessments. http://www.nationsreportcard.gov/reading_math_2015/#reading?grade=4

Nation's Report Card (2015). Mathematics and reading at grade 12. http://www.nationsreportcard.gov/reading_math_g12_2015/#reading

Nation's Report Card (2015). Have the nation's students made gains in reading? http://www.nationsreportcard.gov/reading_math_2015/files/infographic_2015_reading.pdf

New York State Department of Education (2016). Guidance on New York's annual

professional performance review law and regulations. https://www.engageny.org/resource/guidance-on-new-york-s-annual-professional-performance-review-law-and-regulations

New York State Education Department. (n/d). English Language Arts (ELA) and mathematics assessment results. http//www.p12.nysed.gov/irs/ela-math/

No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 6319 (2002).

Obama, B. (2014). The White House. Remarks by the president on the economy – Northwestern University. (Oct. 2, 2014). http://whitehouse.gov/the-press-office/2014/10/02/remarks-president- economy-northwestern-university

Pew Charitable Trust (1996-2016). Pursuing the American Dream: Economic mobility across generations. Retrieved from http://www.pewtrusts.org/en/research-and-analysis/reports/0001/01/01/pursuing-the-american-dream

Pinnell, G. S., Lyons, C. A., Deford, D. E., Bryk, A. S., & Seltzer, M. (1994). Comparing instructional models for the literacy education of high-risk first graders. *Reading Research Quarterly*, 9-39.

PISA (2009). PISA 2009 results: Students on line digital technologies and performance (Volume VI). https://www.oecd.org/pisa/pisaproducts/48270093.pdf

PISA (2012). What 15-year-olds know and what they can do with what they know. https://www.oecd.org/pisa/keyfindings/pisa-2012-results- overview.pdf

Promising Initiatives to Improve Education in Your Community: Reading Excellence Act (2000). http://www2.ed.gov/pubs/promisinginitiatives/rea.html

Qi, S., & O'Connor, R. (2000). Comparison of phonological training procedures in kindergarten classrooms. *The Journal of Educational Research*, *93*(4), 226- 233.

Rampey, B. D., Finnegan, R., Goodman, M., Mohadjer, L., Krenzke, T., Hogan, J., & Provasnik, S. Skills of U. S. unemployed, young, and older adults in sharper focus: Results from the Program for the International Assessment of Adult Competences (PIAAC) 2012/2014. First Look. National Center for Education Statistics.

Reithaug, D. (2002). Orchestrating success in reading: Success, motivation, self-esteem. Stirling Head Enterprises.

Robins, E. (2010). *Beginning reading: Influences on policy in the United States and England 1998-2010.* [Doctoral dissertation, Aurora University, Illinois].

Rose, J. (2005). *Independent review of the teaching of early reading: Interim report.* Department for Education and Skills.

Rose, J. (2006*). Independent review of the teaching of early reading.* https://www.education.gov.uk/publications/standard/pubicationDetail/Page1/D FES-0201-2006

Rutter, M. (1981). Longitudinal studies. In S. A. Mednick and A. E. Baert (Eds.), Prospective longitudinal research: An empirical basis for primary prevention (pp. 326-336). Oxford University Press.

Schunk, D. H. (1996). *Learning theories.* Prentice Hall .

Snow, C. E., Burns, M.S., & Griffwn, P. (1998). *Preventing reading difficulties in young children.* National Academies Press.

Snowling, M. J., & Hulme, C. E. (2005). The science of reading: A handbook. Blackwell Publishing.

Solity, J., & Vousden, J. (2009).Real books vs. reading schemes: A new perspective from instructional psychology. *Educational Psychology, 29* (4), 469-511.

Stahl, S. (2006). Teaching children with reading problems to decode: phonics and "not-phonics" instruction. *Reading and Writing Quarterly,* 14*(2) 165-188.*

Stahl, S. A., & Miller, P. D. (1989). Whole language and language experience approaches for beginning reading: A quantitative research synthesis. *Review of Educational Research, 59*(1), 87-116.

Stanovich, K. (1994). Constructivism in reading education. https://doi.org/10.1177/002246699402800303

Stanovich, K. E., & Stanovich, P. J. (1995). How research might inform the debate about early reading acquisition. *Journal of Research in Reading, 18*(2), 87- 105.

Stornelli, D., & Willows, D. (1998). Effect of more and earlier phonics instruction on kindergarten literacy outcomes. Presented at the National Reading Conference, Austin, Texas.

Stuebing, K. K., Barth, A. E., Cirino, P. T., Francis, D. J., & Fletcher, J. M. (2008). A response to recent reanalyses of the National Reading Panel report: Effects of systematic phonics instruction are practically significant. *Journal of Educational Psychology, 100*(1), 123-134.

Tienken, C. (2017). *Defying standardization: Creating curriculum for an uncertain future.* Rowman & Littlefield.

Urahn, S.K., Currier, E. Elliott, D., Wechler, L. Wilson, D., & Colbert, D. (2012). Pursuing the American dream: Economic mobility across generations.

U.S. Department of Education (2001). Act, N. C. L. B. Retrieved from http://docs.house.gov/meetings/ED/ED00/20160623/105109/HHRG-114-ED00-Wstate-KingJ-20160623.pdf

U.S. Department of Education (2001a). FY 2002 budget summary: Appendix 1. Total expenditures for education in the United States. http://www.ed.gov/offices/OUS/Budget02/Summary/totalexp.html

U.S. Department of Education (2001b). FY 2002 budget summary: Appendix 2. Detailed budget table by program. http://www.ed.gov/offices/OUS/Budget02/Summary/appendices.html

U.S. Department of Education (2009). Bringing evidence-driven progress to education: Report of the coalition for evidence-based policy. http://www.excelgov.org/usermedia/images/uploads/PDFs/coalitionFinRpt.pdf U.S. Department of Education (n.d.). Every Student Succeeds Act (ESA). http://www.ed.gov/essa?src+rn

U.S. Department of Education (2013). Congress announces bipartisan proposal to expand early ed access. http://www.ed.gov/blog/2013/11/congress-announces-bipartisan-proposal-to- expand-early-ed-access U.S. Department of Education (2013). The Nation's Report Card. Retrieved from http://nces.ed.gov/nationsreportcard/subject/publications/main2013/pdf/20144 51.pdf

U.S. Department of Education (2014). A vision for better education: Areas of surprising agreement. Remarks of U.S. Secretary of Education Arne Duncan to the National Convention of the Parent Teacher Association. http://www.ed.gov/news/speeches/vision-better-education-areas-surprising-agreement

U.S. Department of Education (2016). Press Release. www.ed.gov/news/press-releases/six-states-awarded-race-to-the-top-early- learning-challenge-rtt-elc-

grants-build-statew

U.S. Department of Education (n.d.). Key research studies on early learning effectiveness. www.ed.gov/early-learning/research

Vellutino, F. R. (1991). Introduction to three studies on reading acquisition: Convergent findings on theoretical foundations of code-oriented versus whole- language approaches to reading instruction. *Journal of Educational Psychology*, *83*(4), 437.

Voyager Sopris Learning – LETRS (2020). https://www.voyagersopris.com/professional-development/letrs/overview and https://www.voyagersopris.com/professional-development/early-childhood- letrs/overview

Warner, R. M. (2013). *Applied statistics; From bivariate through multivariate techniques.* SAGE Publications.

The White House. (2001, September 8). President emphasizes education reform in radio address. https://www.whitehouse.gov/news/releases/2001/09/20010908.html

The White House. (2002, January 8). President signs landmark education bill. https://www.whitehouse.gov/news/releases/2002/01/20020108-1.html

What Works Clearinghouse, (2015, March 3). Designing quasi-experiments: Meeting What Works Clearinghouse standards without random assignment. https://ies.ed.gov/ncee/wwc/Docs/multimedia/qedwebinar/wwc_webinar_qed_030315.pdf

Wickham, D. (2014). Black history slavery. http.www.usatoday.com/story/opinion/2014/02/10/black-history-slavery-dewayne-wickham-column/5341129/

Willows, D., & Morgan, J. (1996). Early phonological awareness training for at-risk children

in junior kindergarten. In *Nat Read Conf Symp,* Charleston.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). Woodcock-Johnson test of achievement. Riverside Publishing.

Woodcock, R. W., McGrew, K. S., Mather, N., & Schrank, F. (2001). Woodcock- Johnson III NU tests of achievement. Riverside Publishing.

Wyse, D., &Styles, M. (2007). Synthetic phonics and the teaching of reading: The debate surrounding England's "Rose Report." *Literacy, 41*: 35-42.

Yeh, S. S., & Connell, D. B. (2008). Effects of rhyming, vocabulary, and phonemic awareness instruction on phoneme awareness. *Journal of Research in Reading 31*(2), 243-256.

Ziololkowski, R. A., & Goldstein, H. (2008). Effects of an embedded phonological awareness intervention during repeated book reading on preschool children with language delays. *Journal of Early Intervention, 31*(1), 67-90.

APPENDIX A: IRB APPROVAL

Notice of Institutional Review Board Records

April 28, 2020

Study Title: Beginning Reading: A Comparative Study of Beginning Reading Phonics Programs

Principal Investigator: Michelle Beishline

Mrs. Beishline,

This memo serves as official notice that your study entitled, "Beginning Reading: A Comparative Study of Beginning Reading Phonics Programs" was initially reviewed and approved by the Research Ethics Committee of the Seton Hall University Institutional Review Board under the exempt review category on September 26, 2018. The study was officially closed on April 27, 2020 after the submission and review of the final study report.

Thank you,

Michael F. La Fountaine, EdD, ATC, FACSM
Director, Seton Hall University Institutional Review Board

APPENDIX B: REQUEST TO CONDUCT RESEARCH

[redacted]
Superintendent

Dr. Genelle Morris
Chief Accountability Officer/
Chief Information Officer

September 10, 2018

Ms. Michelle Beishline
[redacted]

Re: Request for Research Activity

Dear Ms. Beishline:

This letter serves as an addendum to the approval letter to conduct research with [redacted] Schools dated May 14, 2018, to include:

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. [redacted] Schools adheres to all FERPA guidelines.

Michelle Beishline's dissertation study entitled, "A Comparative Study of Beginning Reading Phonics Programs," was approved by the district on May 14, 2018 and adheres to all FERPA guidelines.

Sincerely,

Genelle Morris, Ed.D.

Genelle Morris, Ed.D.

Office of Shared Accountability
[redacted]
Phone: [redacted] • *Fax:* [redacted] • *Email* [redacted]

Putting children and families first to ensure high academic achievement for all